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☞ The *Mechanical Engineering* department of this paper will be under the charge of Mr. ZERAH COLBURN.

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American Railroad Journal.

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Saturday, August 6, 1853.

Break of Gauges.

It strikes us that some portions of the west, the State of Ohio for instance, are preparing for themselves a great deal of future trouble, by the different gauges upon which they are constructing their roads. The prevailing gauge in the Western States, with the exception of Ohio, is 4 feet 8½ inches. That of Ohio is 4 feet 10 inches. Here, then, is a distinction without a difference; nothing gained in principle, but a great deal lost in practice. All the States lying to the *east* have a different gauge, so that upon reaching Ohio everything has to break bulk. On the west the same is the fact. The gauge of Michigan and Indiana is 4 ft. 8½ in.; so that produce from these States, instead of passing on to New York, or Philadelphia, in the *same* car, is shifted *twice*, involving great delay, expense and damage to the freight; all owing to a folly that is not productive of the least practical good.

But the mischief already done, though felt to be a grievous burden, is far from having its legitimate effect. Instead of profiting by experience, a considerable portion of the people of Ohio seem determined to add to the inconvenience under which they are already suffering. They are taking means to introduce a *new* gauge, the 6 *feet*, into the State; which is peculiar to the *Erie* road and its *branches*, and in existence no where else.

For this innovation we can see no good reason whatever. In fact no sufficient one exists. Admitting the advantages of the 6 feet gauge, its superiority over the 4 feet 8½ inches, it is not so decided as to override the question of *convenience*. The *prevailing* gauge should determine the one to be adopted in a given case. Where the 6 feet prevails, this should govern, and *vice versa*, where the 4 feet 8½ in. is the common one. Of this we think there is no dispute. It is too late to raise the question of the superiority of gauges in a country already filled with roads. In such case it has been settled long ago, and to attempt to raise it under such a state of things, is to be ignorant of the true merits of the case, or it is an attempt to make capital and strength out of mere assumption or words without meaning.

A wider gauge than 4 ft. 8½ in. would undoubtedly be preferable. A majority of Engineers would name a width somewhere between 5, or 5½ feet.. Where the question is an open one, a wider than the ordinary gauge is generally adopted. That of the Pacific railroad, now in progress from St. Louis to the west line of Missouri, is 5½ feet.—The Canadians have adopted the same width.—The reason that influenced in both cases was the fact that the question was considered an open one, and the gauge adopted was the one thought to be best fitted to fill all the conditions of superiority. Had it been otherwise, a different gauge would have been adopted in both cases.

One of the lines of road in Ohio for which a gauge of 6 feet is proposed, is that commencing at the east line of the State, not far from the parallel of *Warren*, passing through Ravenna, Akron, Ashland, Galion, Urbanna and Dayton, to Cincinnati, a distance of some 300 miles. From Dayton, it is expected that the Cincinnati, Hamilton and Dayton road will lay down a six feet track, reducing the length of *new* road to some 240 miles. This road, when built, will cross some 10 or 12 important lines of railroad, all of a different gauge. Its track cannot be used by cars running upon any of them. We will not enlarge upon the inconvenience arising from this diversity of tracks, as it will be readily appreciated by every railroad man, but it is not too much to say, that it would be considered ruinous to the business of the road having the exceptional track, and as sufficient reason for the construction of a *new* road having a gauge in harmony with the prevailing system.—The exceptional gauge would be looked upon, and very naturally, as an *intruder*, and instead of being encouraged and patronized by other roads, and by the mass of the community interested in the latter, it would be regarded with an evil eye, and every effort would be made to punish the intrusion, which very likely might prove fatal to the success of the new work. Now we submit whether it be wise to adopt a gauge the whole influence of which will be to *repel*, instead of attracting business; and which will provoke, instead of securing the good will of the country it traverses, and the companies whose roads it crosses, when no substantial advantage is gained by a non-conformity to the established usages?

The argument used is that a road of an uniform gauge is wanted extending from New York to Cincinnati. Admitted. But in such case, the *Erie* gauge is not the proper one to be adopted to accomplish the object proposed. There are the Penna. roads, through which a route at least one hundred miles shorter may be had. Why not adopt the gauge of the *Sunbury and Erie* road, which is a much shorter route to Ohio, the gauge of which coincides with that of the Pennsylvania roads? The point of crossing of the former will be nearer New York than the point of intersection with the Erie. Why then carry freight more than 100 miles directly from market. It strikes us that the above project is making out the worst possible case for itself at both ends of their line; unfitting itself to receive the advantages that might be derived from its connection with the roads of Ohio, on the one hand, and the shortest and best avenues to the eastern market on the other.

The Sunbury and Erie road is in progress, and will be completed sooner than the great proposed *Ohio* line. Now will freight bound for New York

cross this road and take the long circuit of the Erie road, increasing the distance some one hundred and fifty miles? The idea is absurd. Should the 6 foot gauge be adopted, the freight forwarded by the proposed road could reach New York over the narrow gauge. How unwise it would be, therefore, to adopt a gauge which had suitable connections neither at one end nor the other, and which could neither receive not deliver freight without breaking bulk, and subjecting the road to all those inconveniences, which is the very object of the adoption of the wide gauge to avoid?

The fact is that this question of gauge, as it has been made use of, is a great *humbug*. There is neither sense nor meaning in it. It will really weaken, instead of strengthen, any road that adopts it in Ohio, and any eclat given to a project by its proposed use is all fictitious It is not the gauge for Ohio as things are, and instead of benefitting it will be likely to prove disastrous to any road using it.

The projectors of this road should not blind themselves to the facts we have stated. If their project be a good one, the adoption of the broad gauge would prove a serious impediment to its success. If by adopting the gauge of the state, their road should lose a portion of its supposed importance, rely upon it that this advantage will be a great disadvantage. Everything that gives it a fictitious importance should be discarded and make nothing the basis of action, that is not inherently correct.

In this connection we would state, that we are sorry to learn that the Ohio and Mississippi Railroad, propose to adopt the wide gauge for their road. All the roads with which their line will connect, will have the 4 8½ gauge. This company are taking a step which will not only prove a most serious drawback upon the success of their road, but one that will be sure to raise up a rival project, having the same general direction and objects. The roads of Southern Indiana and Illinois are not going to remain without a convenient avenue to the Cincinnati market, and if the Ohio and Mississippi road will not supply one they will unite together and construct one for themselves. Already is such a project mooted. A shorter route even, can be had between Cincinnati and St. Louis than by the line of the Ohio and Mississippi road, by following up the *Lawrenceburg* road as far as *Greensburg*, and thence striking off direct to *Terre Haute*. The adopting the 6 feet gauge, will compel the Lawrenceburg and Indianapolis company, to continue their track to *Cincinnati*. The construction of the branch of this road, already referred to, will follow as a matter of course; and the step which the Ohio and Mississippi Railroad company supposed would give them the monopoly of business between the above cities will be the one that will raise up to them a formidable and successful rival. The only way to avoid rivalry is to *accommodate* the local business of the country. This they do not propose to do. They are about to sacrifice a portion of the appropriate business of this route to a *fiction*, and excite an opposition which will at least divide *through* business. It is not too late for them to recede. Will they not do it.

North Carolina.

The staging on the line of the Wilmington (N. C.) and Manchester route has been reduced to about 25 miles.

Grooved Axles.

We notice an article in the August number of Appleton's Magazine which, on the whole, appears to defend the practice of grooving axles, if the groove be made larger at the bottom than the journal of the axle, and "rounded" or "scolloped out" instead of having square corners. The axle which broke and caused the Andover accident, was turned with square grooves, the depth of which we do not recollect. We can say, however, that until within a short time the B. and Maine railroad turned their axles with a sharp cornered groove 3-16 inch wide, and ⅜ inch from the inner shoulder of each journal, the groove being ¼ inch larger at bottom than the diameter of journal.—The fracture in the axle broken at Andover *could not* have been seen several days previous to the accident, as it was enclosed in a box to which no attention is required oftener than once in 4 weeks. No doubt the fracture had existed for some time, and no doubt similar fractures are in progress now in other grooved axles, but the boxes require examination so seldom that these fractures may escape notice. We have seen the groove turned into a collar, which is shrunk upon the axle just within the bearing; this, we believe, is one of Mr. Timm's plans, and, we should judge, his best plan, being less liable to lead to accident than that of cutting out the strength of the axle in the part subjected to the most strain.

Balancing Locomotive Drivers.

[Continued from Page 484.]

We resume the illustration of this subject, this week, from D. K. Clark's work. As we presume but few have made any calculation of the necessity of "counterbalancing" but have applied weights by "guess" or by trial, we do not doubt that its consideration will prove acceptable to engine builders and operators.

Internal Disturbing forces (*Continued*)—*Numerical Values.*

Central Forces.—Centrifugal force is excited by the constrained circular motion of a heavy body, and is the force with which the revolving body tends to fly from the center round which it revolves. It acts on the center, and must be met by an equal and opposite strain, known as *centripetal force*, and the two forces so opposed are classed as *central forces*:—they are mere cases of action and reaction, and necessarily co-exist: and it is customary to allude to the disturbing action so induced as, simply, central, or centrifugal force.

Central force depends upon the weight of the revolving body, its velocity in the circle or orbit of motion, and the radius of the circle, or the distance of the body from the center of motion. The intensity of the force in pounds is found by the following rule:—

RULE 1.—*To find the Centrifugal force of a Revolving Body.* Multiply the weight in pounds by the square of the velocity in the circular path, in feet per second,—divide by the radius of the circle in feet,—and by 32. The quotient is the central force in pounds.

Applying the laws of central force to the circumstances of locomotive machinery, it appears that,

1st. When the diameter of wheel, and the speed on the rails are the same, the central force increases directly with the length of the crank, or with the length of the stroke; it also increases directly with the weight of the revolving masses of the crank and the connecting rod.

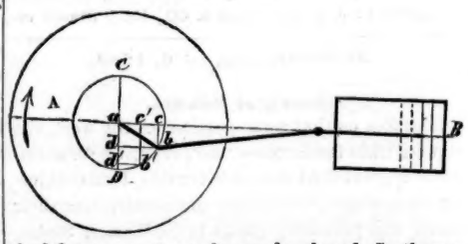
2nd. When the diameter of the wheel and other matters are the same, the centrifugal force of the crank and connecting rod increases as the square of the speed on the rails; that is, for twice the speed there is four times the disturbing force.

3d. When the speed on the rails, and other matters, are the same, the centrifugal force of the crank and connecting rod increases as the square of the diameter of the wheel inversely; that is, for half the diameter, with the same speed, the disturbance is not merely doubled but increased 4 times; on the contrary, with double the wheel, there is only one-fourth of the disturbing force.

These conclusions show not only the great influence of speed in increasing centrifugal force, but also the equally great influence of the diameter of wheel in reducing it; so that if the diameter of wheel be increased in proportion with the speed, other matters being the same, the centrifugal force at the crank and connecting rod would remain unaltered. They explain also the great increase of disturbance from unbalanced masses, arising from a relatively small reduction of the wheel: for example, a reduction of the wheel from six feet to four and a half feet, or in the ratio of 4 to 3, would increase the disturbing force at the same speed, in the ratio of three squared to four squared, or as nine to sixteen, to nearly double.

Analysis of disturbing forces in the Locomotive.—It has already been stated that the centrifugal force of the crank and connecting rod is of more consequence to the stability of the locomotive by its horizontal action parallel to the rail, than by its vertical action. These two actions may be separated by diagram, thus:—Let A, B, be the center line of the engine, and *a*, *b*, the right hand crank revolving in the circle C, D, with its load on the pin at *b*; the centrifugal force at *b* acts in the direction *a*, *b*, and may be represented in intensity by *a*, *b*. Draw *b*, *c*, and *a*, *d*, perpendicular, and *b*, *d*, parallel to A, B; then *a*, *c*, represents the horizontal strain on the axle at *a* towards B, and *a*, *d*, the vertical strain downwards, caused by the central force *a*, *b*. Similarly for any other position of the crank, *a*, *b'* the horizontal and vertical forces, *a*, *c'*; *a*, *d'*, are developed. In the position *a*, D, at half throw, the force is entirely vertical, and the horizontal element vanishes; the same may be said of the position *a*, C, on the opposite side. At the dead points A, B, on the contrary, the force is entirely horizontal, and the vertical element becomes nothing. Thus, though the central force be constant, its horizontal and vertical actions are variable, and alternate in such a manner that the horizontal action is greatest at the dead points, and vanishes at half throw, while the vertical action is greatest at half throw, and vanishes at the dead points.

Fig. 4.



The horizontal forces developed in the succes-

sive acceleration and retardation of the piston and its appendages vary in the same manner and at the same rate as the horizontal element of central force; they are greatest at the dead points, where the piston is to be started and stopped, and vanish at half stroke. The horizontal action due to the piston, is in brief, *centrifugal force, wanting the vertical element.* This is the coincidence to which Mr. Fernihough alluded, in his evidence referred to in last chapter.

The disturbing forces for the left hand cylinder act in the same way, and unite with those of the other cylinder in unsettling the progressive motion of the engine on the rail. In tracing the joint action of these forces it is necessary to separate the revolving masses from those which merely reciprocate. The connecting rod partakes of the two motions as it works between the crank and the cross head; one half of its weight will therefore be classed with the revolving mass, and the remainder with the piston and appendages.

As central force varies with the distance of the center of gravity of the revolving body from the center of motion, a fixed radius, the length of crank, is that for which as a matter of convenience the central force of all the revolving masses may be estimated. While the crank-pin and the half connecting rod work on this radius, the crank itself, inasmuch as its center of gravity is nearer the axle, works on a shorter radius, and it requires to be reduced in the same ratio, *to refer it to the crank pin*, that is, to find the equivalent weight, centered at the pin, which would produce the same central force.

This is done by the following rule:—

RULE 2.—*To refer a given Revolving weight to the crank-pin.*—Multiply the weight in pounds by the distance of its center of gravity from the center of the axle, in inches,—and divide by the length of crank, in inches. The quotient is the equivalent weight in pounds at the crank-pin.

Let A, B, fig. 5, be one check of an inside crank, A the pin, and C the circle described by the center of the pin. The center of gra-

Fig. 5

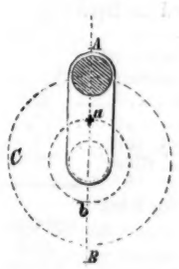
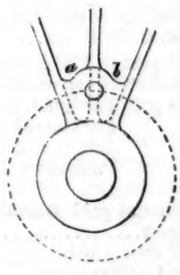


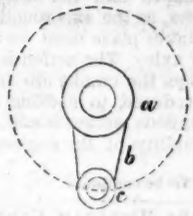
Fig. 6.



vity of the check is at *a*, midway of the crank, and moves in the circle *a*, *b*, with half the radius of the crank-pin. If the crank be 10 inches long, and weighs 96 pounds, the radius B, *a* will be 5 inches, and by the rule $(96\times5)\div10=48$ lbs., the equivalent weight of the crank, referred to the pin; or exactly one half of its actual weight.

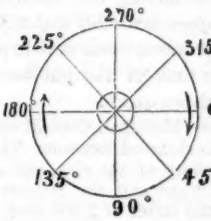
For outside wheel-cranks of cast iron, the metal extra to the nave, formed round the pin may, without material error, be estimated as a semi-cylinder, of which the center of gravity is at the center of the pin. When the wheel-cranks are malleable, and wrought into the spokes, as in fig. 6, the extra metal consists of the wedges *a*, *b*, defined by dotting, at the length of the crank from the center.

Fig. 7.



For independent outside cranks, as in fig. 7, the center of gravity of the entire crank may be found directly by balancing it horizontally over a point; or, overlooking the boss, *a*, which is not a part of the disturbing weight, the socket *c*, may be taken as equivalent weight at the pin.

Fig. 8.



Numerical values of the Disturbing Forces. Le Chatelier's results for the sample engine, fig. 1, are here quoted, in English measures; they are estimated at intervals of 45° of a revolution of the right hand crank, commencing with 0° at the dead point, as set off in fig. 8; and are taken separately for the two cranks, the simultaneous forces for the left hand crank being estimated for positions at right angles to the others, or 90° behind it in the direction of motion.

For the engine in question.

Diameter of cylinder, 15 inch; stroke 22 inches.

Crank, 11 in.; connecting rod 54 inches.

Wheel, 66 inches.

Cylinders, 6 feet 2 inches apart between centers.

Wheels 4 feet 7 inches apart centers, transversly.

Fore and hind axles, 9 feet, 10 inches apart.

Center of gravity, 3 inches behind vertical center line of driving axle.

Weight on rails at fore wheels		6	tons.
Do.	do. driving do	7	"
Do.	do. hind do	8	"
Total in working order		21	
Weight of piston and rod		178	lbs.
	Crosshead	56	"
	Connecting rod	172	"
	Crank referred to pin	100	"
	Crank pin	34	"
	Total	540	lbs.
Weight of crank referred to pin		100	lbs.
	Crank pin	34	"
	Half connecting rod	86	"
	Total revolving weight	220	lbs.

1st. *Of the tendency to Pitching and Rolling.*—This is caused by the upward pressure on the guide-bars due to the oblique action of the connecting rod. With40 lbs. steam in the cylinders, under the full gear it varies from 0 at the end of the stroke, to about 1560 lbs. or 14 cwt. at half stroke, for each cylinder; by the combined action of the two rops, the total upward pressure fluctuates between 14 and 21 cwt. inducing vertical play on the springs, or pitching; and the difference of pressures, right and left, varies from 1 to 14 cwt. four time during a revolution, inducing a rolling motion- The wider apart the cylinders, the greater is the effect from this cause, because the greater is the leverage laterally of the fluctuating forces on the machine.

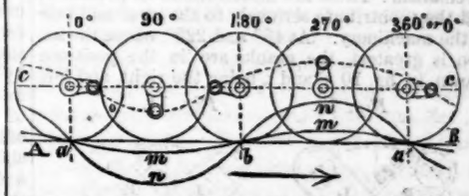
2d. *Vertical action of Centrifugal force.*—Calculated for 220 lbs. or about 2 cwt. the weight of the revolving mass referred to thd crankspin, the following are the vertical pressures for speeds of 25 add 50 miles per hour, reckoned positive (+) when acting downwards, and negative (—) upwards.

TABLE, NO. I.—VERTICAL ACTION BY CENTRIFUGAL FORCE OF A REVOLVING MASS OF 2 CWT. AT CRANK PIN.

Angle of right hand crank.	Right hand Cylinder.		Left hand Cylinder.		Sum of the two Cylind'rs.	
	25 m.p.h.	50 m.p.h	25 m.p.h.	50 m.p.h.	25 m.p.h.	50 m.p.h.
0°	0	0	—8¾	—35	— 8¾	—35
45°	+6¼	+25	—6¼	—25	0	0
90°	+8¾	+35	0	0	+ 8¾	+35
135°	+6¼	+25	+6¼	+25	+12½	+50
180°	0	0	+8¾	+35	+ 8¾	+35
225°	—6¼	—25	+6¼	+25	0	0
270°	—8¾	—35	0	0	— 8¾	—35
315°	—6¼	—25	—6¼	—25	—12½	—50

By this table, it appears, the centrifugal action of about 2 cwt. on the driving axle, alternately adds and subtracts about 9 cwt. from the pressure

Fig. 9.



MOTION OF LOCOMOTIVES.—Illustration of the Vertical Action of Centrifugal Force on the Driving Wheel, at 25 and 50 miles per hour.

on the rails, on one side, at 25 miles per hour; and the variation amounts to 35 cwt. at 50 miles. This is illustrated in fig. 9, where the wheel and crank are shown at intervals of one-fourth of a turn.—Over the distance *a a'*, a whole turn is made, and an extra half turn to *b'*; c c is the path of the center of the axle, and the wave-line *o o* is that of the crank pin. The wave-lines *m n* are constructed by a scale of parts, from the contents of the 2d and 3d columns of the table, and indicate the variations of vertical action for 25 and 50 miles per hour, their depression below the rail-line showing extra downward action, and their elevation above, upward action. They show not only how the action is increased by extra speed, but also that the upward and downward actions coincide with the upward and downward movements of the crank-pin.

The joint vertical action of the two cylinders never exceeds 12½ cwt. up or down, at 25 miles; at 50 miles, it reaches 50 cwt. The downward pressure is met by the rails, and the stability can be affected only by the upward pressure, when it exceeds the weight of the wheels and axles and the mounting, for otherwise the springs cannot be affected. As the wheels and axle alone weigh two tons, and with mounting, 2½ tons, their dead weight alone balances the combined upward pres-

sure at 50 miles. The vertical action at each wheel singly is more powerful, as it reaches 35 cwt. at 50 miles; and, operating at the end of the axle, it has a leverage of 2 to 1 upon the whole dead weight, and would balance it with a force of 25 cwt., leaving 10 cwt. to act on the springs and the load. But this could not affect the compass of the spring materially above $\frac{1}{8}$ inch; still less can the vertical action affect the stability of inside-cylinder locomotives, where it has less leverage upon the load; and, in fact, it is not found in practice that the vertical action of central force in the locomotive operates as a cause of instability.

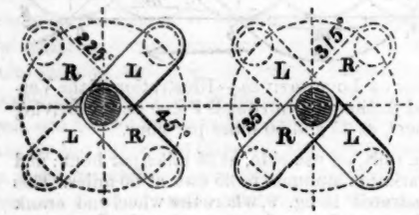
3d. *Longitudinal Fore-and-aft Movement.*—The horizontal action of the whole reciprocating mass may be calculated by the rules employed for the vertical action of centrifugal force; and in proportion as the whole moving weight exceeds that of the revolving weight, the horizontal will be found to exceed the vertical actions. The combined horizontal forces are as follows, calculated for a reciprocating weight of 540 lbs. to each cylinder, or a total of 1080 lbs., about 10 cwt. for the whole machine.

TABLE NO. II.—COMBINED FORE-AND-AFT HORIZONTAL ACTION OF THE WHOLE REVOLVING AND RECIPROCATING WEIGHT, ABOUT 5 CWT. TO EACH CYLINDER.

Angle of right hand Crank.	Horizontal Force, — Forward. + Backward. 25 m.p.h.	50 m.p.h.
0°	—21¾	— 87
45°	—30¾	—123
90	—21¾	— 87
135°	0	0
180°	+21¾	+ 87
225°	+30¾	+123
270°	+21¾	+ 87
315°	0	0

This table shows that the combined horizontal force varies from 0 to 1½ tons at twenty-five miles, and to above six tons at fifty miles, or three tons tons to each crank due to the mere inertia of the mechanism! These are most formidable pressures, and they contribute seriously to the wear and tear of the machinery. At 45° and 225° where the action is greatest, the cranks are in the positions shown in fig. 10 R and L being the right and left

Fig. 10. *Fig.* 11.



hand cranks, the action vanishes at the position shown in fig. 11.

4th. *Horizontal Sinuous Movement.*—This arises from the same causes which create longitudinal fore and aft movement, and in practice the two results are combined; the distinction being that the forces causing sinuous movement predominate *alternately* with those causing longitudinal movement, as exhibited by the letters in table in the last chapter, and further shown in the followihg table III in contrast with the contents of table II. preceding. In these tables it is shown that the sinuous forces are the same in intensity and rate of variation as the fore-and-aft forces just given. The leverage with which they act on the whole mass is equal to half the distance of the centres of cylinders, as the axis round which the pendulous action takes place must be at the middle of the driving axle. The action is greatest at 135° and 315°, when the cranks are in the position fig. 11 and reduced to nothing in the positions fig. 10. Sinuous motion is still more detrimental to the durability of the engine, than fore-and-aft motion.

TABLE NO. III.—COMBINED SINUOUS ACTION OF THE WHOLE REVOLVING RECIPROCATING WEIGHT.

Angle of Right hand Crank.	Sinuous Forces. 25 m.p.h.	50 m.p.h.
0°	—21¾	— 87
45°	0	0
90°	+21¾	+ 87
135°	+30¾	+123
180°	+21¾	+ 87
225°	0	0
270°	—21¾	— 87
315°	—30¾	—123

To be continued.

Workshops of the Michigan Central Railroad at Detroit.

We find a long and useful article in the Detroit Tribune, giving an account of the extent and operations of the workshops of the above company in Detroit. From it we learn that the Michigan Central railroad company have completed their arrangements for building all of their locomotives and cars, and are now turning out specimens of each, which will compare favorably with any made elsewhere. *Four* new locomotives were in process of construction at the time of the publication of the article from which we quote.

The property of the Michigan Central railroad company in Detroit is situated between Third-st. and the western boundary of the city, and an extension of Jefferson avenue and the Detroit river, having a front upon the latter of 2,000 feet, worth at the market value of such property with equal advantages, nearly or quite half a million of dollars. Their buildings consist of a passenger depot, on Third street, 75 by 325 feet, with eight offices for the accommodation of the different railroad officers, a freight depot 100 by 800 feet, in front of which lies their steamboat dock; another 41 by 92 feet, four stories high, and a third 50 by 92 feet, three stories high; a machine shop 63 by 95 feet, two and a half stories high, with one wing 40 by 63 feet, and two stories high, which is used for a coppersmith shop, and another 40 by 43 feet, two stories high, which is used for a boiler shop; an engine house for stationary engine, 23 by 30 feet; blacksmith shop 56 by 182 feet of the most permanent kind, and another 30 by 63 feet; oil and pattern fire proof shop, 16 by 53 feet, four offices for car shop and the superintendent of machinery, 36 by 40 feet, two and a half stories high and fire proof. A car shop 55 by 170 feet, with the stories all occupied, and with a planing room connected with it 22 by 65 feet. In addition to these buildings they have a paint shop 36 by 160 feet, and a foundry building occupied for a carpenter's shop, etc., 40 by 90 feet. All of the buildings thus far noticed, are substantial brick structures, of the most permanent and durable character. Besides these they have temporary buildings, one 82 feet by 170 feet, and used partly for shops and partly for storage, another 43 by 135 feet, with several smaller buildings, occupied now for similar purposes, but which will before long give place to more durable structures.

The machine shops are under the superintendence of S. T. Newhall, Esq.

The whole number of men employed in carpenter's shops and wood department generally is 164. they are paid annually $45,000, and the value oft he cars, &c. manufactured by them exceeds $100,000.

The second story of the freight depot is of sufficient capacity to store 50,000 barrels of flour, leaving the lower floor exclusively for the business of the road. There is attached to itan engine house 18 by 24 feet, with a 24 horse power engine, driving three Elevators, with capacity to raise 45 barrels per minute, or upwards of 25,000 barrels per day, when necessary.

The men in charge of the car building and carpenter department, are G. B. Avery, General Superintendent; S. C. Case Assistant Superintendent.

The lower floor of the machine shop is used for setting up new locomotives, under the superintendence of G. J. Lomas.

At the west end of the lower floor is the boiler shop, 45 feet square. Ascending to the second floor, we come to the finishing shop. At the east of this shop, and on the same floor, is the coppersmith and sheet iron workers' department. West of the machine shop is located the blacksmith shop. This building is 180 feet long by 55 ft. wide, of one story, the walls of the building 24 feet in height, with slate roofwith ventilators in the attic, the entire length of the building. It contains 33 forges or fires, employing regularly 70 men as blacksmiths and helpers. Adding 10 additional forges in another building and 20 smiths and helpers, there are 90 men in the smith's department. Adjoining the main finishing shop is the engine house, a circular building 130 feet diameter, the walls of which are 16 feet in height, and measuring 64 feet from the floor in the center to the top of the dome in the center of the building. In this building are 16 pits or stalls for locomotives, surrounding the turn-table, which is situated in the center. The entire machinery in the shops, together with the fires in the smiths' shops, is propelled by a 40 horse-power stationary engine.

The whole number of men employed in the iron working department in these shops, 290; running engines and firemen, 71; total number of men in the iron department at Detroit, 361.

Stock used daily at the present time at the Detroit shops: Iron Castings, 4,400 lbs.; Brass, 200; Wrought Iron, 7,500, and Steel, 800, being an average of six tons and a half per day, or at the rate of more than two thousand tons per annum.

The machinery in this machine shop consists of six drill lathes, four power planing machines, 3 hand planing machines, one circular and one upright saw, one trip hammer, machinery for manufacture of locomotive tire, one heavy lathe for turning locomotive tire, 12 other lathes of various sizes, three screw cutting machines, and 2 machines for boring car wheels.

The men in charge of the machine shops and iron departments are S. T. Newhall, General Superintendent; George J. Lomas, Assistant do.; E. Benham, Book-keeper; James Therry, Draughtsman.

We will now recapitulate the above facts.

Number of men in Machine shop	361
" " Wood Department	164
" " Freight Department, &c	91
" " Passenger Depot Office	20
Total number of men employed in Detroit by the M. C. R. R. Co	636
Amount paid to Finishers, Blacksmiths and Laborers engaged per annum	$113,300
Amount paid Car builders, &c	45,000
" " For Car painting	11,000
" " Laborers in Depot, &c	35,000
" " Passengers Depot Office	20,000
Total amount paid annually for labor in Depot	$214,300
Lumber used worth	40,000
Iron used, (6500 tons)	120,000
Total amount for all purposes	$374,300

New York Locomotive Works.

We learn, says the Albany Evening Journal, that Mr. E. P. Gould, late Master Mechanic on the Hudson River railroad, has accepted the position of Superintendent of the New York Locomotive Works, at Jersey City. The company, says the Journal, are fortunate in their selection, and have secured the services of a sound, practical mechanic. The Hudson River railroad appears to be a kind of graduating school, in which the highest perfection is attained, and to which the best talent is attracted.

Crystal Palace.

The "Machine Arcade" is progressing towards completion. But very few articles however of United States manufacture, intended for exhibition in that department, have arrived. There are to be two steam engines for driving what machinery is offered for exhibition. One of these is from Corliss, Nightingale & Co. of Providence, R. I. and is of 60 horse power. The other is a double cylinder, horizontal engine from the Essex Co. of Lawrence, Massachusetts. This engine has 18 in. cylinders, 3½ feet stroke, and both cylinders will be capable of exerting 120 horse power.

The list of American machinery is extremely limited. The Centrifugal Pump; a Cutting and shearing Press acting on Dick's patent; the power Printing Presses of A B. Taylor of New York, and of Isaac Adams of Boston; a Throstle frame from the Franklin Foundry and Machine Co. of Providence, R. I.; Wylly's Drawing Regulator, for cotton preparation, from Levalley, Lanphear and Co. of Phenix, R. I.; a Brick Press from Charles Carnell of Philadelphia; etc. are among the most prominent on exhibition.

Among American manufactures of iron we see a fine exhibition of Scales, from Fairbanks & Co comprising one Depot Scale of 12,000 lbs., 4 platform truck scales and six counter scales.

There are also Scales by J. A. Ross, of St. Louis; Iron doors from McMurray and Pawly, of St. Louis; a magnificent safe from Stearns and Marvin of this city. Linus Yale's Bank Lock; Bank Lock by J. H. Butterworth of Dover, N. J.; Engine and Coach Springs from Gatchell & Gates. Francis' Patent Life Boat, etc. There is a case of Carpenters Tools, as Planes, etc., of beautiful manufacture from the Ohio Tool Co. of Columbus Ohio.

Thus far the contributions in this department will not compare in extent with those usually seen at State fairs.

In the department of Great Britain much more is already exhibited. Joseph Whitworth & Co of Manchester, contribute a good display of Machinist's tools. These consist of a powerful Slotting machine, with very massive frame, and having an uniform downward and quick return motion; a Screw Cutting machine, to cut from ½ inch to 2 inches; a general Shaping Machine having self acting feeds in either a horizontal, vertical, angular or circular direction; a patent Duplex Lathe, which we have not yet had an opportunity to examine; and last, a 14 feet Planing Machine with revolving tool to plane both ways, the carriage being driven by a long screw working into two revolving flanged discs.

John Mason of Rochdale has one 120 spindle Roving frame, to run 1250 turns per minute; a 72 spindle Slubbing frame to run 800 turns per minute; also a large scroll screw chuck and an improved vice, of Stiven's patent.

Among British manufactures of iron the Lowmoor company contribute a plate of iron, 19 ft. 2 in. ×4¾ feet, ×¾ inch (not ⅜ inch as has been stated); a finished flanged Tire for Engine Driving Wheel; a Car Wheel with wro't iron arms, rim and tire, and cast iron nave; a car axle; together with numerous specimens of iron which have been bent, tied and twisted in a cold state, and specimens of Coal, Coke, Limestone and Ironstone from the Lowmoor works.

W. Chance, Son & Co. of Birmingham contribute a full rack of Cables, Chains, etc. together with specimens of cable iron tied in *hard knots* without fracture, while in a cold state. The American agency of this house is E. B. Mullany, 42 Cliff St. New York.

George Hopper, of Durham, sends engine shafts of various forms.

James Russell & Sons, of Wednesbury, Staffordshire, send Wro't Iron Tubes, also wrought iron crosses and elbows, all apparantly of the best workmanship.

Jowitt and Battie, of the Saville works, Sheffield, send specimens of Steel and Files. American agency, Delapierre, Baldwin & Co. 33 Dey St. New York.

John Brown, of the Atlas Steel Works, Sheffield, sends Patent Spiral Buffers, Engine and railway Carriage Springs, Steel Files, etc. American agency John S. Webb, 15 Gold St. New York.

Marriott and Atkinson, of the Fitzalan Works, Sheffield, send a splendid case of Files. American agency, John Moulson Jr. 102 John Street, New York.

Thomas Turton & Sons, whose branch house is at 18 Cliff Street, New York, send a fine case of Files and a case of beautiful carpenters tools, besides tools for other purposes.

A Traversing Screw Jack, from George England & Co. of Hatcham Iron works, London, is an article which has been tested with much success on many of our principal railroads.

There is also a working model of semaphore and lantern Junction Signal, as used on the English railways. This forms a good illustration of the efficient and complete system of railway signals adopted in England.

There is a beautiful case of drawing instruments from the manufactory of J. Kern, Aarau, Switzerland, whose Agent is C. T. Amsler, 224 Chestnut Street, Philadelphia.

Our list, though by no means complete, contains most of the articles which are exhibited as *machinery*, and generally the more prominent of the manufactures of iron for industrial purposes. Its short extent, especially of works from our own country shows how little interest has been taken in the exhibition by machinists and iron manufacturers. To the *practical* mind, it must be recollected that the *steam engine* and the *locomotive* appear as worthy of exhibition as the proudest works of the painter or sculptor.

Grand Trunk Railway.

We learn that Hon. Messrs. Betts & Jackson, contractors of the Grand Trunk Line of Canada, and Robert Stephenson, Esq., the distinguished Engineer, arrived in the steamer of Thursday week. Mr. Stephenson comes out in reference to the proposed bridge over the St. Lawrence at Montreal, a work of greater magnitude than the celebrated "Britainia Bridge," of which he was the projector.

Messrs. Jackson and Betts have contracts for roads in the Lower Provinces, second only in magnitude to those undertaken by them in Canada, which involve an outlay of $45,000,000. The projects they have on hand will constitute a complete system of roads, adequate to the wants of all the Provinces, and when completed, cannot fail of becoming to them sources of extraordinary prosperity.

Another Link in the Southern Railroad.

We learn from the Vicksburg Whig that the citizens of Autauga County, Alabama, situated on the north side of the Alabama river, between Selma and Montgomery—lately held a meeting at the county seat, and passed resolut ons in favor of a railroad from Montgomery to intersect the Selma and Tennessee river railroad, at some point between Burnsville and Montevallo, east of Selma. A second meeting, in the same county, is to be held at Prattsville on the 2nd of August, to forward this connection. They are now making the road from Selma, west, in the direction of Vicksburg, to Union Town, whilst the directors of the Southern railroad have advertised for contracts east of Brandon towards Selma, and will probably soon be ready to let out the road to the Alabama line. The only link then required, to connect the Mississippi river at Vicksburg with Savannah, Charleston, Nashville, and by the East Tennessee and Southern railroads, to the Northern cities, will be the connection between the Alabama State line and Union Town, a short link running through Sumpter and Marengo, two of the largest cotton producing, slaveholding and wealthiest counties, not only in Alabama, but in the South; each of which could build the railroad through her borders without asking for a dollar from abroad.

Sunbury and Erie Railroad.

We learn from the Philadelphia *News* that the work on this road between Sunbury and Williamsport, is steadily progressing. The grading between Milton and Black Hole, about sixteen miles is half done, some four or five sections above Warrior Run, culverts and all, being entirely completed. The bridge over the Susquehanna, about two miles below the Muncy Dam is also progressing. More than one-third of the stone covering several acres, are already on the ground and dressed, and the masonry of the piers going up, The section through Milton is graded, and the one below running through the farm of James Cameron, Esq., is about half done. The first section above Chiliquaque Creek, and the three above, are about to be vigorously prosecuted. The section on the farm of Mr. Watts, four miles above Northumberland, is about half done, and the remaining sections down, which are light, are also about to be commenced. The road is to be graded immediately for a double track. Whether for a narrow, or for six feet gauge, will, we presume, says the Sunbury *American*, depend upon the success of Mr. Fallon's mission to Europe. Should he not succeed, and the Philadelphians refuse to take the matter into their hands, the project will, continues the American, fall into the hands of the New York capitalists, who will, undoubtedly, adopt the wide gauge.

Metropolitan Railroad.

The Metropolitan railroad company has been organized in Washington. This road will lead from that city through Montgomery and Washington counties, Maryland, and connect with the Baltimore and Ohio railroad, so as to form a direct communication between Wheeling and Washington. The directors for the first year are as follows: John W. Maury, W. W. Corcoran, Geo. Parker, Joseph Bryan, Washington; David English, A. H. Dodge, Wm. M. Boyce, A. H. Pickrell, H. C. Mathews, Georgetown; F. C. Clopper, Montgomery County; Meredith Davis, Frederick County; Daniel Weisel, Washington County.

Precaution against Accidents.

The New Haven railroad company, since the accident at Norwalk, have ordered all of their passenger trains to come to a full stop before passing any of the draw bridges on their road. The operation of this rule is attended with considerable delay, which would be inexcusible but from the fact that it proceeds from a cautious regard for the *lives* of passengers. As the most *effectual* means for safety, it perhaps stands above others, but it is yet a question if there cannot be secured the passage of a drawbridge at forty miles per hour, by attending it with such safeguards as shall reduce the chances of danger to the same proportion as upon other parts of the road. The safe progress of a railway train must depend more upon an *imparted* than upon an *observed* knowledge of the condition of the track. That is, there are a large number of points where the track cannot be *seen* twenty rods in advance from the train, and where the speed of the train must not be diminished.—These are upon curves, and also upon all parts of the road in dark nights. The means of safety in such cases are the exhibition of signals, which may be considered as reports of examinations made by those placed for that purpose upon the road. The safety of the train, in any case, depends upon the exercise of human vigilance, and the question must be, is it not practically as safe to trust the train to *one* man, upon the track, as to *another* man, upon the engine? Cannot a man, who although himself removed from danger, be made, nevertheless, to feel a vigilant caution for the safety of others? A safe, sober man, properly disciplined and properly paid, undoubtedly may.

The movements of the great railway system of England are regulated by a system of signals, and a safe movement in almost every case is the result, for it is a well understood fact that accidents are far less numerous there than in the United States. It would not appear to be a difficult matter to signal a train, which is going at sixty miles an hour, that there is danger a-head. An intelligible signal—a large board or flag, such as is generally known to be indicative of danger—would not fail to be regarded by men whose own credits, whose trusts, and whose lives are involved in that danger. The practice of stopping a train, to be assured that a draw is closed, might certainly be dispensed with if the same assurance could be had half a mile before reaching the draw. The knowledge possessed by the engineman, of the state of the road, which is derived from his own immediate observation, must of course be limited, and yet the information which is imparted to him by others through the aid of signals, is as likely to produce accidents at stations, crossings, or switches as at draw bridges.

A draw bridge is comparatively a safe point to pass where signals are established, for it is opened only for the passage of vessels, and where the keeper and all others engaged must be at their posts and wide awake. Not so at a switch. This may be displaced for any trifling cause; the man to whom its operation is entrusted has less to spur his caution, and may readily forget to put the switch right again; the indications of its signal are seen only at a short distance, and accident may easily follow. Accidents at draw bringes, however, are very rare, and we never knew of one which could not be easily traced to the absence of signals. The calamity at Norwalk, the accidents at Brandywine and Rancocas Creek, are all due to the same neglect.

If then, we admit that reliable signals may be transmitted in each case of danger, we are beyond the necessity of such extreme precautionary measures as have been adopted by the New Haven Company. Their regulation then appears in the light of a reaction, induced by the occurence of an accident in a case where proper means had not been taken to avert it. We see that they suffer a detention of nearly a quarter of an hour on every through trip besides the wear and tear of rails and machinery always produced by stopping and starting. All railway men are well aware that a road with numerous stations is more expensive for the working of its machinery than another with fewer stations. It is only the income derived from these stations that makes return for the expense of stopping. If then, a stop is made at every draw, there is an expense incurred, on a road like the New Haven, the same as with half a dozen additional stations, without deriving any income therefrom. It is not worth while to urge the inconvenience of these detentions, as the passengers, who are most interested, can judge of that point for themselves. The direct expense to the company is probably more, for the number of trains they run, than would suffice to place a watchman at every one of these bridges. We must consider therefore that the recent regulation of the company has been made from the want of a knowledge of better means. No measure had been taken to secure safety for the express trains running through Norwalk, and now, that an accident has happened, the most inconvenient and expensive means are employed to avert such calamities in future. The insufficiency of the signal, whose indications should have been enough to ensure safety, is well known. It was a canvas ball of inferior size, and could not be seen, when raised, in season to receive any useful information from its indications. From within three eighths of a mile in approaching the bridge from the west, beyond which distance it would not be looked for, it was visible, when raised, once, for *fifty feet*, (a distance traversed in *less than one second* when going forty miles per hour), and not afterwards until within 188 yards of the draw. At a speed of forty miles per hour, at which speed the draw should be safely passed, this would allow *ten seconds* between discovering the signal and reaching the draw. True, if the train was going slower this time would be prolonged, but the signal should have been effective enough to have ordered a stop, or permitted the full speed, when the train was half a mile back.

The character of the signal relied upon was also of the most indifferent kind under any display. It was a *negative* signal. Its presence indicated safety, while its *absence* warned the train of danger. For miles of the road where no danger existed there was the same absence of signals and here, where danger of the most fearful kind threatened the train no signal of any kind was to be expected. It was like signalling a train in daylight and abandoning it to its own chances in the darkness of night.

The location of the line at this dangerous point was very unfavorable for the timely display of any signal when erected only at the bridge. Besides the danger of a decending grade terminating at a draw, there were curves and natural obstacles in the way of seeing the draw in season to stop an approaching train. The line was originally located in a straight course through this place, but the temptation of saving a trifling sum in grading has had its effect in making this one of the most dangerous points on the line of the road.

Cheap Stationary Engine.

The knowledge of the details of a cheap and substantial engine is often of great service. There is scarcely a town to which railroads have just penetrated but has occasion for just such engines, and some enterprising builder soon finds it profitable to make a set of patterns for his own use and for that of his neighborhood. We have the notes of a very cheap, strong and serviceable upright engine, which may be of use to some of our readers. The engine is of a kind particularly adapted for saw-mills, machine shops and foundries, sash and blind shops, etc. It occupies but very little space, and being very simple, requires but little expense for its operation and maintenance.

Cylinder 12 inches in diameter, 24 inch stroke. Steam ports 6 in. by 1 in. Exhaust port 1½ in. wide. Cylinder is held by bottom flange only to a bed plate forming the connection of the columns of the frame, and is made tight by a lead joint.—Weight of cylinder casting in rough, 564 lbs.

Frame is of two hollow columns connected by bed plate at bottom, and cross braces for pedestal seat near the top. There is a stout rib on under side of bed plate, by which the bottom of the engine is held in a 16 inch timber, bolts being used to secure the engine only upon the square flanges on the tops of the columns. The columns are 4 feet from center to center; 12 feet 4½ inches from bottom of bed plate (exclusive of rib) to top of upper flanges. 10 ft. 6 in. from bottom to seat of pedestal, and 11 ft. ½ in. to center of shaft. Columns 8¾ in. diameter just above base mouldings, and 6½ inches at necks. Weight of frame casting 2915 lbs.

Wrought iron shaft 4⅞ inches diameter, and 7½ feet long. Bearings 4⅝ in. diam. and 11 in. long. Fly wheel with flat rim to belt from, and is 8 feet in diameter, 14 in. face, and weighs about 2500 lbs.

Piston has cast iron packing of two outer and one inner ring, each of ½ inch thickness. Piston rod cut off 3 ft. 11 inches in the rough. Connecting rod 6 feet 3 inches long from center to center; bearing at crank end 2⅝ inches diameter. 2⅝ inches long. Fork end at cross head, each bearing being 2¼ inches diameter, and 2 inches long.—Crank pin held in crank by a flat key.

Eccentric is of variable throw by forming one eccentric within the other, the inner eccentric having 1⅜ inch throw, and the outer one 2⅝ inches. The eccentrics are usually set to be adjustable at 3⅛, 3⅝, or 4 inches throw. Lap of valve, one inch. Regulator is of a simple pattern, secured to a bracket bolted to the frame. Steam pipe is a 2½ inch gas pipe. Water pipe from force pump to boiler is 1¼ inch diameter. Boiler is 28 feet long, 42 inches in diameter, has two 15 inch flues. Shell of boiler of ¼ inch iron, flues 3-16 inch.—Cast iron heads weighing 600 lbs each. Entire boiler weighs 7000 lbs. Boiler is set between two 12 inch walls, 46 inches apart in clear. Under

side of boiler 42 inches from hearth, and there is a flue beyond grate of 7 inches deep around lower half of boiler. Grate 16 in. from bottom side of boiler.

To build this engine costs as follows—

9000 lbs. castings, at 3 cts. per lb.....	$270 00
Finishing and setting up.....	110 00
Boiler 7000 lbs, at 7 cts. per lb.....	490 00
Forging, composition, and extras.....	130 00
	$1,000 00

Of late years there has been a great profit in building cheap stationary engines. During 1851, engines of the above specification could be built at a cost price of $850 to $875, while they would sell at the same time for $1750. The erecting of the engine and setting of boiler were always charged for as extras, by the builders. More than five hundred engines of the above general description have already been built, by different makers, and have always given satisfaction where an effective and economical engine was wanted.

Chesapeake and Ohio Canal.

The Chesapeake and Ohio Canal company have published their annual report, for the year ending 30th June, from which we make the following extracts:

Notwithstanding the disadvantages, the revenue of last year was only $17,110,92 less than that of 1852, where there was no serious interruption to the navigation of the canal. From the commencement of the coal trade in March last, to the 31st of May, 58,355 tons of coal were delivered at tide water, and it is expected that the amount for the whole year will not be less than 200,000 tons. From January to the 31st of May, the following leading articles, in addition to coal, have passed down the canal, viz: 115,260 barrels of flour; 110,660 bushels of wheat; 109,740 do. corn. From the 1st of January to 31st of May, the cargoes ascending the canal amounted to 7,061 tons, and the cargoes descending to 95,129 tons. Amount of tolls collected $56,221 69.

After applying the sums borrowed from the Corporations and Banks of Washington, Georgetown, and Alexandria, to the purpose designed, and the revenue of 1852 to current expenses, there remained at the close of the year, arrearages, for repairs, officers' salaries, and other current expenses, amounting to $49,000. This sum has since been reduced, by means of the revenue of the present year, to $17,000, which will probably be paid by the revenue of the next two months

The revenue from the 1st of June to the end of the present year, will probably amount to $114,000; and the ordinary expenses to $70,000, for maintenance of the canal, interest on loans, and other current expenses; which will leave a surplus of $34,000 applicable to the above balance of $17,000, and to other claims, for which the revenues of the Canal company are first liable.

The amount of claims, first entitled to payment out of the next revenues of the company, is $435,370. In this statement, the interest on $114,500 borrowed from corporations and banks, and on $44,535 30, for which certificates of debt were issued for repairs, &c., prior to 1845, is not included, because it has been regularly paid.

The next prior claims against the company amount to $1,950,000, and include $1,700,000 bonds issued in pursuance of the Maryland act passed in 1844, for completing the Canal, and payable thirty-five years after date. * * * *

From the foregoing statement of the debts, expenses and revenue, and of the claims first payable out of the net profits of the Canal an opinion may be formed respecting the time when the payment of interest will be resumed on the bonds guaranteed by Virginia, and on those issued in pursuance of the law of Maryland. If the creditors first entitled to payment would consent, as they probably will, to receive only their interest in common with the next preferred creditors, till there is a surplus revenue to be applied to the extinguishment of their claims, it would be in the power of the company to resume the payment of interest on all their preferred debts at an early period. But the President and Directors could not now possibly designate any particular time for that purpose, without exciting expectations which accidents to the Canal, or other circumstances, might possibly prevent them from fulfilling.

In preparing this report, the President and Directors have thought it unnecessary to indulge in conjectures respecting the future prosperity of the company, so far as it depends on resources not yet developed, or events which may never occur; but existing circumstances justify them in expressing the opinion, that the canal will soon become the medium of an extensive and profitable trade. Since the middle of September, it has continued in excellent order, with the exception of a few slight accidents, such as must occasionally occur on every canal.

Gardner's Rock Drill.

We would invite attention to the advertisement in another column, of this useful machine, for dispensing with a great deal of labor in rock work. We copy the following description of the machine from the Boston Transcript:—"Allow us briefly to describe the engine whose powerful blows excavated in our presence a huge hole horizontally in the granite. Figure to yourselves a platform about three and a half feet wide, and ten or twelve feet long, made of very strong timbers, firmly bolted together. On the hinder end of the frame or platform stands a small upright steam boiler and engine (fastened to the boiler) of three or four horse power. From the forward end of the platform rise four posts, strongly braced, and six or seven feet high. The posts serve to support a strong iron frame, bearing the drill and its apparatus, and allow it to be moved up or down, and to be placed in any position from the horizontal to the vertical. It can drill a hole above or beneath the machine, or in any intermediate direction. The drill is held in an iron mandrel, which is placed in the iron frame, which last is supported on trunnions moving in iron boxes between the aforesaid upright posts. Through these trunnions runs a shaft, on which are placed two cams inside, and a band wheel outside the posts. This band wheel is connected by a belt with the fly wheel of the steam engine. The cams serve to draw back the drill from the rock, and at the same time compress an india rubber spring of about five inches in diameter, and fourteen inches in length. The re-action of the spring gives the gigantic force to the blow when the cams have released the mandril. The length of stroke is about six inches.

This mandril is connected to a cross head which slides in guides, and this cross head by means of a stout screw to another cross head, against which the cams press in drawing back the drill and compressing the spring—which spring re-acts against the latter cross head giving impetus to the drill. By a very simple but ingenious combination of a twisting bar, a pawl and ratchet wheel, the drill is made to turn on its axis about one-tenth of a revolution, more or less, each time the drill is drawn back. Thus it is at every blow compelled to strike in a new place, each time taking out chips, clearing itself readily and not making a wedge hole. The strokes were rapid, sometimes 100 to 125 per minute, and might be easily increased to 150, or perhaps with longer practice to 200 per minute.—By another simple arrangement the combinations of twisting bar, pawl and ratchet wheel causes the aforesaid stout screw to rotate slowly, and thus the drill is advanced towards the rock with a rapidity varying according to the softness of the stone; in limestone it might be advanced perhaps five or six or even many more inches per minute. The drills in granite will ordinarily be changed about every 6 inches, but fourteen inches have been drilled without change.

In the common way of drilling, three men can sink a four inch hole only about forty inches per day of ten hours, or four inches per hour. While this machine was in operation, we saw the drill enter the rock horizontally in a four inch hole at a rate of ten inches in 11 minutes, with two men only, and this be it remembered, was not limestone, or any of the softer rocks, but the hardest kind of Quincy granite. We can understand this better when remembering that two blows are given every second, each blow will be the power of twenty men. Some of the advantages of this machine over others are 1st. The machine is relieved of the violent shock caused vy the re-active force of the blow, unavoidable in machines hitherto constructed. 2d. The drill is kept uniformly rotating and advancing, and cannot turn backwards, or recede from the rock, being prevented by the ratchet wheels. 3d. The whole machine tends to advance towards the rock in consequence of the re-active force of the spring. Other machines tend to "advance backwards." 4th. A number of drills may be operated in the same machine and at the same time, and in different directions—thus rendering it very useful for tunnelling. To contrast the expenses of hand and machine drilling, suppose twelve gangs of three men, each at $1 25 per day, amounting to $45, can sink twelve holes of forty inches each, amounting in all to 480 inches, or 40 feet.—Let us see how much it would cost to do the same by the steam drill: Say two men at $1.50 per day each, plus say $1 25 each day for coal, and 75 cents per day for interest on the cost of the machine and repairs, amounting in all to five dollars per diem. This is one-ninth the cost of hand labor, no allowance being made for contingencies. An invention which not only promises thus much, but actually performs it, will not be long overlooked by intelligent contractors for railroads, and mine and quarry owners. We understand it is to be exhibited in full operation at the New York Crystal Palace." Those who are interested may find a notice in our advertising columns concerning the machine.

Alleghany Valley Railroad.

A meeting of the Board of Managers of the Alleghany Valley Railroad company, held yesterday at their office in this city, the following preamble and resolutions were adopted:

WHEREAS, The maps, profiles, and estimates made under the direction of the Chief Engineer, Mr. Roberts, of the several routes surveyed for the Alleghany Valley Railroad North-east of Kittanning, as exhibited by him, together with his report upon the same, are entirely satisfactory, therefore.

Resolved, That after due examination of the whole subject, that route from Kittanning, *via* Mahoning, Red Bank, and East Branch of the Clariga Rivers, to Bishop's Summit, and thence by the way of Potato Creek to the most eligible points on the New York State line, be and the same is hereby adopted as the line of said Alleghany Valley Railroad.

Resolved, That the Chief Engineer be authorized and requested to locate and prepare the line for work forth with, according to the route this day determined upon.

Resolved, That the Chief Engineer be requested to prepare his report, together with a map of the various lines surveyed, for publication.

American Railroad Journal.

Saturday, August 6, 1853.

Milwaukee and Mississippi Railroad.

We learn that the contract for completing the western extension of the Oakland and Ottawa R. R. from the Rock River to Prairie du Chien on the Mississippi, a distance of 130 miles—62 miles of the road being already done west from Milwaukee—has been closed.

The contractor is A. S. Catlin, Esq., president of the Mechanic's Bank, Burlington, Vt., who is represented to be a gentleman of energy and large wealth. The terms of his contract require the road to be done by the 1st of January, 1855, the same time the managers of the Oakland and Ottawa road have pledged themselves to have it completed.

The company are to pay one-half ($1,625,000) in stock, and $1,625,000 in bonds. The road is to be finished ready for running—the rail to be 58 pounds to the yard.

Stock and Money Market.

The downward tendency in stocks, noticed last week, still continues. Nearly all the stocks in the fancy list have fallen materially; Erie being 2 per cent. lower, Harlem 3½, Hudson River 3. The better class of stocks have suffered severely. New York and New Haven has fallen 4 per cent.; Michigan Central 10, Reading 6. The premium stocks that have suffered most had all a vulnerable spot, to which may in a great measure be attributed their decline. The New York and New Haven is still suffering from the effects of the late disaster. In the case of the Michigan Central, excessive dividends recently paid appear to have created much dissatisfaction. The Panama stock appears to be quietly settling down, the last quotations being 110. When we commented in February last, upon the management of the road, the stock stood at 140. The slow progress of the road, and its vast cost, appear to have had the effect of opening the eyes of the public in reference to this project. The fancy coal and mining stocks are "nowhere." An equal degree of depression in the fancy line has not been seen for years.

The tightness of the money market is, of course, the disturbing principle in stocks. The stringency was unexpected, and is attributed mainly to the action of the banks under the new law, compelling them to make weekly statements. There cannot be a great demand for the ordinary wants of business, for the active season has not yet commenced. There is some apprehension felt that we are importing too freely, but there does not appear to be an extraordinary demand for money for shipment. The better opinion is, that the stringency is but temporary, and without any good cause in the condition of the country, or in any inherent weakness in monied institutions, and will soon give place to an easy market.

The imports and exports for July were very large. The following are the returns for the Port of New York:

Railway Share List,

Compiled from the latest returns—corrected every Wednesday—on a par valuation of $100.

NAME OF COMPANY.		Miles open.	Capital paid in.	Funded debt.	Tot. cost of road and equipm't.	Gross Earnings for last official year.	Net Earnings for last official yr.	Dividend for do.	Price of Shares.
Atlantic and St. Lawrence	Maine.	150	1,417,587	3,000,000	4,649,392	200,233	.....	none	100
Androscoggin and Kennebec	"	55	809,878	1,016,500	2,064,458	140,561	80,053	none	36
Kennebec and Portland	"	72	876,741	800,000	2,180,000	133,338	.....	none	45
Port., Saco and Portsmouth	"	51	1,355,500	123,884	1,459,384	208,669	.....	6	100
York and Cumberland	"	20	227,981	291,200	In progres	15,694	.....	none	40
Boston, Concord and Montreal	N. H.	93	1,649,278	622,200	2,540,217	150,538	79,659	none	41
Concord	"	35	1,485,000	none.	1,485,000	305,805	141,836	8	109
Cheshire	"	54	2,078,625	720,900	3,002,094	287,768	55,266	5	48
Northern	"	82	3,016,634	.....	.....	328,782	163,075	5	58
Manchester and Lawrence	"	24	717,543	.....	.....	.....	.....	6½	96½
Nashua and Lowell	"	15	600,000	none.	651,214	132,545	51,513	8	109
Portsmouth and Concord	"	47	.....	.....	1,400,000	.....	.....	none	....
Sullivan	"	26	.....	.....	673,500	.....	.....	none	14
Connecticut and Passumpsic	Vt.	61	1,097,600	550,000	1,745,516	.....	.....	none	41
Rutland	"	120	2,486,000	2,429,100	5,577,467	495,397	266,539	none	32½
Vermont Central	"	117	8,500,000	3,500,000	12,000,000	.....	.....	....	17
Vermont and Canada	"	47	1,500,000	.....	1,500,000	Leased to the Vt. C		ent.	102
Western Vermont	"	51	392,000	700,000	.....	Recently	opened.	none	....
Vermont Valley	"	24	.....	.....	.....	.....	.....	none	....
Boston and Lowell	Mass.	28	1,830,000	.....	1,995,249	388,108	130,881	7½	99
Boston and Maine	"	83	4,076,974	150,000	4,092,927	659,001	338,215	7	106¾
Boston and Providence	"	53	3,160,390	390,000	3,546,214	469,656	227,434	6	87¾
Boston and Worcester	"	69	4,500,000	425,000	4,845,967	758,819	331,296	7	101¼
Cape Cod branch	"	28	421,295	171,800	633,906	60,743	30,056	2½	40
Connecticut River	"	52	1,591,100	193,500	1,801,946	229,004	72,028	5	55
Eastern	"	75	2,850,000	500,000	3,120,391	488,793	241,017	7½	93
Fall River	"	42	1,050,000	none.	1,050,000	229,445	99,589	8	104¾
Fitchburg	"	66	3,540,000	112,305	3,623,073	574,574	232,787	6	99¾
New Bedford and Taunton	"	20	500,000	none.	520,475	164,230	43,950	7½	117
Norfolk County	"	26	547,015	819,743	1,245,927	67,251	23,415	none	68
Old Colony	"	45	1,964,070	282,300	2,293,534	322,213	101,510	none	92
Taunton Branch	"	12	250,000	none.	307,136	137,406	24,399	8	....
Vermont and Massachusetts	"	77	2,140,536	1,001,500	3,203,333	218,679	18,648	none	18
Worcester and Nashua	"	45	1,134,000	171,210	1,321,945	162,109	66,900	4½	59½
Western	"	155	5,150,000	5,319,520	9,953,759	1,339,873	683,194	6½	99
Stonington	R. I.	50	.....	.....	.....	.....	.....	....	58½
Providence and Worcester	"	40	1,457,500	300,000	1,731,498	253,690	139,514	6	....
Canal	Conn.	45	.....	.....	.....	.....	.....	10	....
Hartford and New Haven	"	62	3,000,000	472,000	.....	600,408	332,223	none	125
Housatonic	"	110	.....	.....	2,500,000	329,041	168,902	none	....
Hartford, Prov. and Fishkill	"	50	.....	.....	In progres	69,629	.....	none	....
New London, Wil. and Palmer	"	66	558,861	800,000	1,511,111	114,410	.....	....	....
New York and New Haven	"	61	3,000,000	1,641,000	4,978,487	806,713	428,173	7	102
Naugatuck	"	62	926,000	440,000	.....	.....	.....	....	....
New London and New Haven	"	55	750,500	650,000	1,380,610	Recently	opened.	none	45
Norwich and Worcester	"	54	2,121,110	701,600	2,596,488	267,561	116,965	4½	52¼
Buffalo and New York City	N. Y.	91	900,000	1,550,000	2,550,500	Recently	opened.	none	85
Buffalo, Corning and N. York	"	132	.....	.....	In progres	.....	.....	none	65
Buffalo and State Line	"	69	879,636	872,000	1,921,270	Recently	opened.	....	130
Canandaigua and Niagara F	"	50	.....	.....	In progres	.....	.....	....	....
Canandaigua and Elmira	"	47	425,509	582,400	987,627	76,760	39,360	none	68
Cayuga and Susquehanna	"	35	687,000	400,000	1,070,786	74,241	23,496	none	....
Erie, (New York and Erie)	"	464	9,612,995	24,003,865	31,301,806	3,537,766	1,691,623	7	74½
Hudson River	"	144	3,740,515	7,046,395	10,527,654	1,063,659	338,783	none	69¼
Harlem	"	130	4,725,250	977,463	6,102,935	681,445	324,494	5	58¼
Long Island	"	95	1,875,148	516,246	2,446,391	205,068	44,070	none	35¼
New York Central	"	504	22,858,600	2,111,824	.....	.....	.....	....	116¼
Ogdensburgh (Northern)	"	118	1,579,969	2,969,760	5,138,834	480,137	195,847	none	38
Oswego and Syracuse	"	35	350,000	201,500	607,803	90,616	43,609	4	70
Plattsburg and Montreal	"	23	174,042	131,000	349,775	Recently	opened.	none	....
Rensselaer and Saratoga	"	25	610,000	25,000	774,495	213,078	96,737	....	....
Rutland and Washington	"	60	850,000	400,000	1,250,000	Recently	opened.	....	....
Saratoga and Washington	"	41	899,800	940,000	1,832,945	173,545	135,017	none	30
Troy and Rutland	"	32	237,690	100,000	329,577	Recently	opened.	....	33
Troy and Boston	"	39	430,936	700,000	1,043,357	Recently	opened.	none	....
Watertown and Rome	"	96	1,011,940	650,000	1,693,711	225,152	116,706	8	109
Camden and Amboy	N. J.	65	1,500,000	.....	4,327,499	1,388,385	478,413	10	150
Morris and Essex	"	45	1,022,420	128,000	1,220,325	149,941	79,252	4	....
New Jersey	"	31	2,197,840	476,000	3,245,720	603,942	316,259	10	148
New Jersey Central	"	63	986,106	1,500,000	2,379,880	260,899	124,740	3½	....
Cumberland Valley	Penn.	56	1,184,500	13,000	1,265,143	118,617	76,890	5	....
Erie and North East	"	20	600,000	.....	750,000	Recently	opened.	....	125
Harrisburgh and Lancaster	"	36	783,950	688,051	1,609,494	200,249	106,932	8	....
Philadelphia and Reading	"	95	6,656,332	10,427,800	17,141,987	2,480,626	1,251,987	7	86½
Philad., Wilmington and Balt.	"	98	3,850,000	2,408,276	6,818,889	667,785	888,501	5	74

Railway Share List,

Compiled from the latest returns—corrected every Wednesday—on a par valuation of $100.

NAME OF COMPANY.		Miles open.	Capital paid in.	Funded debt.	Tot. cost of road and equipm't.	Gross Earnings for last official year.	Net earnings for last official yr.	Dividend for do.	Price of shares.
Pennsylvania Central	Penn.	250	9,768,155	5,000,000	13,600,000	1,943,827	617,625	....	99¼
Philadelphia and Trenton	"	30	.....	.....	.....	.....	.....	....	....
Pennsylvania Coal Co	"	47	.....	.....	.....	.....	.....	....	....
Baltimore and Ohio	Md.	381	9,188,300	9,827,123	19,542,307	1,325,563	615,384	7	71⅛
Washington branch	"	38	1,650,000	.....	1,650,000	348,622	216,237	8	....
Baltimore and Susquehanna	"	57	.....	.....	.....	413,673	152,536	....	42
Alexandria and Orange	Va.	65	.....	.....	In prog.	.....	.....	....	....
Manassas Gap	"	27	.....	.....	In prog.	.....	.....	....	....
Petersburgh	"	64	.....	.....	.....	.....	.....	....	....
Richmond and Danville	"	73	1,372,324	200,000	In prog.	.....	.....	....	....
Richmond and Petersburgh	"	22	685,000	.....	1,100,000	122,861	74,113	none	....
Rich., Fred. and Potomac	"	76	1,000,000	503,006	1,531,238	254,376	113,256	7	105
South Side	"	62	1,328,722	800,000	In prog.	.....	.....	....	....
Virginia Central	"	107	1,400,100	446,036	In prog.	176,485	74,902	none	....
Virginia and Tennessee	"	60	3,000,000	1,500,000	In prog.	.....	.....	none	....
Winchester and Potomac	"	32	180,000	120,000	416,532	89,776	.....	12	....
Wilmington and Raleigh	N .C.	161	1,338,878	1,134,698	2,965,574	510,038	153,898	6	....
Charlotte and South Carolina	S. C.	110	.....	.....	.....	.....	.....	....	....
Greenville and Columbia	"	140	1,004,231	300,000	In prog.	.....	.....	....	....
South Carolina	"	242	3,858,840	3,000,000	7,002,396	1,000,717	609,711	7	125
Wilmington and Manchester	"	....	.....	.....	In prog.	.....	.....	....	....
Georgia Central	Ga.	191	3,100,000	306,187	3,378,132	945,508	508,625	8	122
Georgia	"	211	4,000,000	1,214	.....	934,424	456,468	7½	....
Macon and Western	"	101	1,214,283	168,000	1,596,283	296,584	153,697	9	109
Muscogee	"	71	.....	.....	In prog.	.....	.....	....	....
South Western	"	50	586,887	150,000	743,525	129,395	71,535	8	....
Alabama and Tennessee River	Ala.	55	.....	.....	In prog.	.....	.....	....	....
Memphis and Charleston	"	93	776,259	400,000	In prog.	.....	.....	....	....
Mobile and Ohio	"	33	879,868	.....	In prog.	.....	.....	....	....
Montgomery and West Point	"	88	688,611	.....	1,330,960	173,542	76,079	8	....
Southern	Miss.	60	.....	.....	.....	.....	.....	....	....
East Tennessee and Georgia	Tenn.	80	835,000	541,000	In prog.	.....	.....	....	....
Nashville and Chattanooga	"	125	2,093,814	850,000	In prog.	.....	.....	....	....
Covington and Lexington	Ky.	....	1,430,150	1,100,000	In prog.	.....	.....	....	....
Frankfort and Lexington	"	29	357,218	.....	584,902	87,421	44,250	....	80
Louisville and Frankfort	"	65	.....	.....	.....	.....	.....	....	....
Maysville and Lexington	"	....	.....	.....	In prog.	.....	.....	....	....
Cleveland and Pittsburgh	Ohio.	100	1,239,450	1,371,000	2,963,756	194,429	123,306	6	96
Cleveland, Painesv. and Ash.	"	71	.....	.....	.....	.....	.....	....	....
Cleveland and Columbus	"	135	3,027,000	408,200	3,655,000	777,793	483,454	12	132
Columbus, Piqua and Indiana	"	....	.....	.....	In prog.	.....	.....	....	....
Columbus and Lake Erie	"	61	.....	.....	.....	.....	.....	....	....
Cincinnati., Ham. and Dayton	"	60	1,694,000	906,000	2,600,000	321,793	200,967	....	115
Cincinnati and Marietta	"	....	.....	.....	In prog.	.....	.....	....	72½
Dayton and Western	"	40	310,000	550,000	925,000	Recently	opened.	....	80
Dayton and Michigan	"	20	.....	.....	In prog.	.....	.....	....	....
Eaton and Hamilton	"	36	.....	.....	.....	.....	.....	....	70
Greenville and Miami	"	31	.....	.....	.....	.....	.....	....	....
Hillsboro	"	37	.....	.....	In prog.	.....	.....	....	....
Little Miami	"	84	2,370,784	.....	2,634,157	526,746	314,670	10	119½
Mansfield and Sandusky	"	....	900,000	1,000,000	1,855,000	.....	.....	....	....
Mad River and Lake Erie	"	167	2,387,200	1,767,000	4,110,148	540,518	113,401	....	95
Ohio Central	"	57	.....	.....	In prog.	.....	.....	....	....
Ohio and Mississippi	"	....	.....	.....	"	.....	.....	....	....
Ohio and Pennsylvania	"	187	1,750,700	2,450,000	.....	Recently	opened.	....	....
Ohio and Indiana	"	....	.....	.....	In prog.	.....	.....	....	....
Scioto and Hocking Valley	"	....	.....	.....	"	.....	.....	....	....
Toledo, Norwalk and Clevel'd	"	87	552,000	800,000	1,317,140	Recently	opened.	....	150
Xenia and Columbus	"	54	1,092,137	119,500	1,257,714	237,506	135,363	15	....
Evansville and Illinois	Ind.	31	.....	.....	In prog.	.....	.....	....	....
Indiana Central	"	....	.....	.....	"	.....	.....	....	....
Indiana Northern	"	131	.....	.....	"	Recently	opened.	....	....
Indianapolis and Bellefontaine	"	83	.....	.....	"	.....	.....	....	....
Lawrenceburg and Ind	"	....	.....	.....	In prog.	.....	.....	....	75
Lafayette and Indianapolis	"	62	.....	.....	.....	Recently	opened.	....	....
Madison and Indianapolis	"	88	1,650,000	750,000	2,400,000	516,414	268,075	10	85
Peru and Indianapolis	"	40	.....	.....	In prog.	.....	.....	....	....
Terre Haute and Indianapolis	"	72	632,387	663,100	1,353,019	105,944	71,446	4	108
Rock Island and Chicago	"	....	.....	.....	.....	.....	.....	....	....
Chicago and Mississippi	"	....	.....	.....	.....	.....	.....	....	....
Illinois Central	Ill.	....	.....	.....	.....	.....	.....	....	136
Galena and Chicago	"	92	1,932;361	500,000	In prog.	473,548	286,152	....	124
Michigan Southern	Mich.	315	2,499.410	2,629,000	6,430,246	592,187	293,046	....	128
Michigan Central	"	282	4,000,000	4,067,396	8,614,193	.....	.....	8	106
Pacific	Mo.	....	.....	.....	.....	.....	.....	....	....

	Imports. Dry Goods.	Other.	Total.	Exports.
1st Week,	1,920,206	1,552,037	3,472,243	1,559,351
2d "	2,614,198	2,110,045	4,724,243	1,312,992
3d "	2,758,613	1,715,151	4,473,764	1,244,700
4th "	4,036,274	2,660,390	6,696,664	1,311,819
Total.	11,429,291	8,037,623	19,366,914	5,428,862
Tot. '52.	6,926,151	4,862,951	11,789,102	2,965,543
Incr'se.	4,503,140	3,174,672	7,577,812	2,463,320

The export of specie this year has been $3,901,-158 against $1,971,499 for July last year.

The imports at other ports will not probably show a marked increase. New York imports for the whole country, and the increase1 consumption is seen in the enlarged volume of imports at this port. Largely increased imports do not necessarily imply that we are overtrading, or that we are buying beyond our moans of payment.—The rapid manner in which the interior is opened up by railroads is adding in equal ratio to the ability of the country to purchase. There is no doubt that the people of Ohio, for instance, are able to indulge in twice the amount of luxuries that they could five years ago. They have now a market for the products of their industry; and increased imports go to show the progress of the country, rather than overtrading. It will be seen that the increase is chiefly in articles of *luxury*, proving the correctness of our remarks. Still, as we are pretty *fast* people, it would be surprising if we did not occasionally *overdo* in every department of business.

The receipts of the Erie railroad for the month of July are reported as follows:

For July, 1853	$332,069 75
For July, 1852	301,825 38
Increase	$30,244 37

This is not a flattering result, and is probably not up to the expectation of the company. It certainly does not look well for an October dividend. It will be noticed as a significant fact that, for two or three months past, the company have not reported the earnings from *passengers* and freight, but only give the aggregate of both. This is done, we presume, to *conceal* the loss of the *through* passenger travel, which is now monopolized by the Central line. There is no doubt that the Erie has been completely outgeneraled in the recent arrangements between the two companies, which has resulted in a loss to the former. of an important source of revenue. For the *through* business, this company has abandoned the western division of its road, from Hornellsville to Dunkirk, a distance of 128 miles, and have made Buffalo its Lake terminus, and by doing so, have thrown the whole of this business into the hands of their opponents. The managers of the Erie are evidently no match for the experienced, sagacious and successful veterans who control the Central line.

The receipts of the Hudson River railroad are large. They are reported as follows:

July, 1853	$121,584
July, 1852	86,016
Increase	$35,568

This shows a large gain. We presume that a portion of the increase is made up of money received from persons ticketed over other roads. We do not know such to be the fact. If not, the result is a very favorable one.

The following is the coinage of the U. S. Mint at Philadelphia, for the month of July, 1853:

Gold.	*Pieces.*	*Amount.*
Double Eagles	50,228	$1,004,560 00
Eagles	20,860	208,600 00
Half Eagles	43,000	215,000 00
Quarter Eagles	83,216	208,040 00
Dollars	60,276	60,276 00
Total	257,580	$1,696,476 00
Fine gold bars		2,762,993 28
Total		$4,459,469 28
Silver.		
Half Dollars	552,000	276,000 00
Quarter Dollars	1,404,000	351,000 00
Dimes	540,000	54,000 00
Half Dimes	580,000	29,000 00
Total	3,071,000	$710,000 00
Copper.		
Cents	183,228	$1,832 28

GOLD BULLION DEPOSITED.

From California	$3,459,000 00
From other sources	32,000 00
Total	$3,491,000 00

SILVER BULLION DEPOSITED.

From various sources	$611,000 00
Gold received in June	$4,545,179 00
Gold received in July	$3,491,000 00

Safety of the Chilled Tire.

In conversation, a short time since, with Mr. S. J. Hayes, who has been a machinist on the Baltimore and Ohio railroad for 18 years, and who has had entire charge of the whole motive power of the road for the last four years, he assured us that since the adoption of the chilled tire on that road some ten years ago, but *two* had ever broken thro' the rim. We accompanied him to the pattern loft and were shown the identical pattern from which were cast these tires. The pattern was 35 inches in diameter on the tread, and was originally two inches thick, but since the failure of two of the castings from it, it had been increased in thickness to three inches, which is the usual thickness of all the cast iron tires used. During this time, there have probably been *fifteen hundred* of these tires in service. The security of their application is owing to the fact that they are not *strained* in putting them on, as is done by *shrinking* a wrought tire. They are merely held by bolts upon a conical bearing. The wheel center is half an inch larger in diameter on the inner than on the outer edge, and yet the tendency of the action of the flange against the rail is to draw the tire further and further on. To give an idea of the extent of shrinking, we will say that six feet tires are shrunk at Paterson, three-fourths of an inch in their inner circumference, that is a force is applied to the tire sufficient to stretch it that distance while it is in a state no ways approaching ductility. By this process, wrought iron, although of far greater original strength than cast iron is so reduced in strength as to be the less reliable and safe of the two materials.

To show the security of these tires when exposed to the severe physical difficulties of the Baltimore and Ohio road, Mr. Hayes showed us an engine which had run for several months during the last winter, upon the mountain section west of Cumberland. It had traversed daily the hardest of grades, one in particular of 13 miles length, rising 116 feet per mile, and had run through curves of the minimum radii allowed on the line. The summit elevation of the road, nearly three thousand feet above the sea, is a region of intense cold the mercury being sometimes 15° *below zero*, in the winter months, while there is more or less frost during every month in the year. Under all of these circumstances of extreme severity the tires of this engine remained good, and several other engines also which are kept on the same section as assistant engines had "stood the winter" equally as well.

Mr. B. H. Latrobe, the chief engineer, and Wm. Parker, Esq., the general superintendent of this road, have both of them, for a long time been strongly in favor of the chilled tire, and the method of its application as practised upon their road. Mr. Parker, who is a Northern man, and who knows well enough what was once the New England feeling in regard to cast iron tires, says that were he to return to the managemnnt of a Northern road, he would make the adoption of the chilled tire one of his first acts. Mr. Trimble of the Philadelphia and Baltimore railroad, has also for a long time been acquainted with these tires. None have ever broken on his road except by violent concussions from "run offs." Probably above 100 of these tires have been used on this road to the present time.

In New England also, there is a great change of feeling among superintendents and master mechanics as to the value of this improvement. At the Eastern railroad shop at East Boston, the visiter may see several sets in successful use and on hand for renewals. They have been used there for over four years. The Boston and Lowell road have one set of the chilled tires and several sets of the chilled whole wheels, the latter having all the merits except that of the economy of the chilled tire. The Nashua and Lowell, Salem and Lowell, Lowell and Lawrence, Boston and Maine, Fitchburg and Boston and Providence roads have also got the chilled wheel in successful use, but suffer their engines to be detained a week for each renewal of the wheels, and go to all the expense of making and fitting new crank pins, re-setting valve, etc., where they would save many hundreds of dollars every year by adopting the removable tire. They express entire satisfaction with the durability, safety, and adhesion of the chilled surface, and it must be admitted that where that surface is obtained from the whole wheel, they pay highly enough for its advantages. The preference for the whole wheel arises from the fact that they are supplied ready on hand at Boston, while the tire has not been generally made except at Manchester, N. H., Wilmington, Delaware, Baltimore, Md., and Alexandria, Va. If the parties who have fixed the standard of motive power for New England had hit upon the application of the slip tire, its introduction along with their engines would have been universal in that section. The men who build engines, do not always get hold of the best improvements at first, but combine gradually their own ideas with those of "outsiders" in such a manner as to complete an acceptable work.

As it is, however, builders tacitly admit the superiority of the chilled tire, by resorting to the application of the whole chilled wheel. The leading Boston, Philadelphia and Baltimore builders have done this long since. The slight tax which is secured from the use of the tire by the operation of a patent monopoly, is another obstacle in the minds of men prejudiced against patents. But where the balance sheet is struck it will be found that the chilled tire "pays its way," and leaves a respectable net gain besides. This is sufficiently attested in the growing favor with which it is regarded, and its increased use by railroad companies throughout the whole country. Its *general* adoption, by reason of its reliability and economy, is not far distant.

Babbitt's Metal.

This composition is now used on most of the rubbing surfaces about locomotives, excepting valve faces, eccentric straps and link motions, and excepting, in some cases, the piston rings, cross heads and driving boxes. Its composition, as made at the oldest and largest brass foundries in Boston, is as follows—

Melt 1 part (by weight) of copper, and then add 2 parts of antimony;—stir well, and then throw in 4 parts of tin. This forms a metal called *hardening*, and is prepared for use by melting one pound of hardening with two pounds of tin. The articles to be lined are dipped in tinning salts. Boxes are placed upon an arbor, and have the metal poured in a hole on the back of box. Gibs and similar pieces are lined on a flat surface.

Railroad Items.

The citizens of San Augustine and its vicinity have subscribed one hundred thousand dollars to the Opelousas and Texas Railroad, and it is expected that the adjoluing counties will subscribe one hundred and fifty thousand more to insure the terminus of the road at Fullerton's Bluff, on the Sabine. The people of that section expect that this railroad will be extended from New Orleans to San Diego, on the Pacific.

The aggregate earnings of the York and Cumberland (Maryland) Railroad for the months of April, May and June, of this year, were $15,946 10, against $13,421 for the same time in 1852—showing an increase of $2,514 31.

The Milwaukee, Fon du Lac and Oshkosh Railroad Company have concluded a negotiation for iron enough to lay thirty miles of their road. It is expected that the road will be opened to Oshkosh in 18 months from the 1st of July.

The cars on the Richmond and Danville road, have commenced running to Drake's Branch eight miles above Keysville. We are also informed, that by the 1st of September, the road will be completed to the banks of Staunton river; by which time it is anticipated, the contractors will have completed the bridge over the same.

The Railroad Convention, which met at Clarks-Va. on the 13th. ult, appointed a committee to employ an engineer to survey the route for the proposed extension of the Roanoke Valley Railroad to Milton, N. C., and from thence to Leaksville, A committee was also appointed to use every effort to procure from the legislatures of N. Carolina and Virginia a charter for the same.

At a recent meeting of the board of directors of the Wisconsin Central railroad company, a contract was entered into by said board and the Fox River Valley Railroad, by which a connection is secured between those roads and the State Line at Genoa, Walworth county.

The line of the Chicago, Sterling and Mississippi railroad has been located to commence at the city of Chicago, thence by the most eligible route to the village of Naperville, in Du Page county;

thence to Aurora, Kane county; thence near the village of Little Rock, Kendall county; thence to Sterling, Whitesides county; thence to the Mississippi river, to a point not far above Fulton city, nor below Albany, on said river, in said county of Whitesides.

West Side Railroad.

NEW YORK TO ALBANY.

C. D. Westbrook, Jr., the Engineer appointed by the committee of organization of this road, has reported the results of an instrumental survey made by him, with reference to the feasibility and character of the proposod work.

The survey commenced at Hoboken and extended, 66.07 miles, to a point in the valleyof Walkill, near the line of a survey made for the Goshen and Albany road. By that survey the remaining distance to Albany was 75,43 miles, thus making the total distance from Hoboken to Albany as indicated by these surveys, 141,50 miles.

The main summit of this route is in Ramapo Valley, 2.31 miles north of the point where the line diverges from the Erie railroad, and is elevated 5 ft. above the grade of that road at the point of its divergence. Thence the grade descends with various inclinations, the maximum of which is 25 feet to the mile, to the crossing of Murderer's Creek. Thence it ascends, at the rate of 25 feet to the mile, a distance of 3.07 miles to its summit, between the waters of Murderer's Creek and those of the Walkill. Thence it continues, on ground mostly level, and slightly undulating and descending to the point where the survey was ended, a further distance of 9.85 miles. Thence it would descend the valley of the Walkill.

The survey proposes a tunnel of 4000 feet at Weehawken hill. The line crosses Hackensack river, passes Hackensack village, and enters the basin of Saddle river, 6 miles beyond. From the entrance of this valley to the crossing of Saddle river is 3.17 miles, and from the latter point a grade of 45 feet per mile extends for 4.17 miles. The line crosses the Erie railroad 20 feet above its track, and at a point 24¼ miles from Hoboken.—From here to its junction with the Erie road and beyond that to the point near Wilkes', where it afterwards diverges, is a distance of 17.78 miles.

There are, except in but one case, no grades on the 66 miles of this survey exceeding 25 feet per mile, and in connection with the Goshen and Albany survey, a line is had shorter than has ever been located by actual survey between New York and Albany; being but 10 miles longer than a direct line.

Surveys are in progress from Goshen to Kingston. From Kingston to Albany is a continuous series of planes, extending nearly to Albany, interrupted only by the rock ridge at Catskill, and by three or four streams, and varying but little from their average elevation of 100 feet above the Hudson—broken, however, beyond Coxsackie, by occasional ravines from 10 to 200 feet wide, and 15 to 50 feet deep.

The cost of the work may be judged from the offer of a party of capitalists to build the road with a double track through its entire length, whose weight of rail and character of work shall be equal to that of the Hudson River railroad, and whose grades curvature and distance shall equal those described in this report, and laid down in the map and profile, for $7,500,000. This offer would, also, include the right of way, and stipulate for the fulfilment of the contract in two years, giving ample security for its performance.

Journal of Railroad Law.

SUBMITTING LEGISLATIVE ACTS TO THE PEOPLE.

The Supreme Court of Louisiana have, in the case of the *Police Jury, Right Bank of Parish of Orleans* (a municipal authority of that State) *vs. The Representatives of John McDonough*, come to a conclusion opposite to that of our own Courts, concerning the practice of procuring the popular sanction for laws.

The appeal in this case was made in reference to a tax bill for constructing the N. O., Opelousas and Gt. Western railroad.

The Court say "if the Legislature can constitutionally confer on a municipal authority power to pass a taxing ordinance, it would seem rather a safeguard against oppression than the reverse, to qualify the power by requiring it to be recognized with the approbation of a majority of those who are to bear the burden." They rely on the following cases: Burgess vs. Pue, 12 Gill. 191, 7 Western Law Journal 220; Parker vs. Commonwealth, 6 Barr. 507; 8 Ibid. 395 10 Ibid. 216; Rice vs. Foster 14 Harrington 495. They also refer to the Act of Congress of 9 July, 1846, in which the question of retrocession of Alexandria to Virginia was submitted to the people of that place; and to several acts upon the statute books of Louisiana. The Court expressed their surprise that such legislative caution should be a matter of reproach.

In the case above mentioned, the Court have also came to the conclusion that the Legislature may authorise a municipal authority to subscribe to a Railroad.

CAN LOCAL CORPORATIONS SUBSCRIBE TO RAILROADS NOT WITHIN THEIR LIMITS?

This question has, during the past week, been not only very *warmly* but also elaborately discussed in Philadelphia, before the Supreme Court of Pennsylvania, by several of the ablest Counsel of that city. The cases in which this discussion occurred were those of the Philadelphia, Easton and Water Gap railroad company, and the Hempfield railroad company. In the former case the city of Philadelphia had subscribed to the amount of a million of dollars in pursuance of an Act of the Legislature, and had issued their bonds accordingly.

Certain citizens invoked the equitable powers of the Court, in order to enjoin the corporation of Philadelphia from laying taxes in order to carry out the enterprise in question.

The principal points urged by Mr. Brewster, in behalf of the petitioners, were the following:

1st. The sole power of laying taxes for matters of *general* utility belongs to the Legislature. The Legislature have no right to transfer this authority or to delegate it to any other body. And the road in question would be of no special benefit to Philadelphia.

2d. The effect of the tax in question will be to take away the private property of citizens without compensating them therefor. It matters not whether their money be taken or their land. In either case compensation is necessary. What compensation is to be given to the citizens of Philadelphia in this case? Simply *the opinion* of the Legislature that the Water Gap road would benefit them ultimately.

3d. Only local matters are embraced within the scope of the duties of the corporation of Philadelphia. By the act in question the Legislature has authorised that corporation to tax the citizens for matters not local. One of the roads contemplated terminates in the suburbs, without entering any portion of the city,—and the other does not approach within thirty miles of Philadelphia. As well might Philadelphia be authorized to subscribe to the Lake Shore railroad, or to the Collins Line of Steamers. The Act is contrary to the bill of rights and to the genius of the constitution.

Mr. Dallas in behalf of the railroad companies, based his argument chiefly upon the following points, premising that the "genius of the constitution" was a very vague expression. One man might consider *liberty*, another *equality*, another *protection* to be the genius of the constitution.

1st. The constitution confers upon the legislature the whole power of making laws, except in those cases where it restricts them expressly, or by necessary implication.

2d. The function of the legislature is merely to make laws. It must necessarily avail itself of extrinsic agencies in order to carry these laws into effect.

3d. The legislature is not merely authorised to command a thing to be done. It can also authorise some competent party to execute its commands.

4th. Laying a tax is a different thing from taking private property for a public purpose. A tax is the contribution of the citizens to the general good.

5th. Beyond all dispute the legislature may authorise a city corporation to lay a local tax for a local purpose.

The local authorities of a community are best qualified to judge whether a measure will promote their local interests. The local authorities of Philadelphia, have been consulted in regard to the expediency of subscribing to the roads in question, and have responded affirmatively, and the tax is designed to subserve a work which it is supposed will redound to local advantage.

7th. In questions of policy, so far as is compatible with law, the decision of the majority must control, and to this the minority must yield. The majority in this case have by their duly constituted authorities sanctioned the imposition of the tax now complained of, and they were the legitimate judges in regard to its expediency.

A decision in this case may be expected in September, when the Supreme court will meet at Pittsburg.

Triangles.

We do not recollect of having ever seen any rule for obtaining the length of side of an equilateral triangle of known area. Although a simple problem, and perhaps of but occasional use, we have arranged a convenient rule for its solution.

To obtain the length of side of an equilateral triangle, the area being given.—Multiply the area by '57735, and take twice the square root of the product for the length of side.

A line bisecting an angle and equally dividing the area of an equilateral triangle, in other words a perpendicular raised midway of the base, is '866-025 the length of a side.

Locomotive Engines.

To the Editor of the Am. R. R. Journal.

Dear Sir:—My attention has been called to an article in your Journal of July 16, apparently from a disinterested visitor to the Repair shop of the Boston and Providence railroad company. From the reading of it, I think the writer must give us as *facts*, statements which the Annual Report of this company for 1852 do not corroborate.

Soon after the publication of the Annual Reports of the railroad corporations for 1852, by the Legislature, I was induced to compile a table of the cost per mile for running the larger roads which center in Boston. Among them was the Boston and Providence railroad. According to their report, the whole number of miles run by them in 1852 was 288,920, and the cost of fuel $63,902 60, about 22½ cents per mile, or $9 23 for fuel for a single trip over their road 41 miles long. Now if ¾ of a cord be their allowance it must be high cost wood. Assuming their wood to cost them when ready for use $7 00 per cord, about a fair price, their average consumption must have been quite 10 feet. The writer of the article alluded to, in his table of calculrtion gives us the capacity of the Tenders for wood. The engines used on their passenger trains I find average nearly 1⅜ cord, and my observations lead me to think that this is nearer the quantity consumed by them on each trip than ¾ cord. Neither do they run five eight wheel cars each trip as the writer has been informed. The article alluded to looks *puffy*, though probably without design on the part of the author.

In my table, spoken of, I took 11 Roads and if I am correct the Boston and Providence, although they charge nothing to new locomotives to cover depreciation, they stood No. 6; in repairs of passenger cars No. 2; in freight cars No. 4; cost of fuel No. 9; cost of waste No. 8; cost of oil No.4.

I make this statement to correct any wrong impressions that may be gathered from the article alluded to, and with this am done.

Candor.

The statement of the consumption of fuel being ¾ cord per trip was not given as the *average* for each engine but was the actual consumption of the "Neponset" on several trips where the writer of the article referred to was upon that engine. A train of five eight wheel cars *was* drawn in each case, viz: three first class passenger cars, one second class car, and one baggage car; although two first class passenger cars, with the other cars, may be a more usual train.

The writer of the article in the Journal of July 16, is tolerably well informed on the subject of locomotives, and has made comparisons of the Boston and Providence engines with those upon the other principal roads running out of Boston. The Griggs style of engine is in his opinion a cheap durable and economical style of engine for an inside connection, as much so as is in use on any road, and *more so* than the styles adopted on some roads. The Boston and Providence engines were charged with extraordinary expenses last year from the failure of *eleven cranks* owing wholly to unsound iron or bad welding, for which the master of machinery was not responsible. The Griggs engines are thoroughly built and are kept in an excellent working condition.

So far as the acknowledged means of superiority are considered, and without which engines are not economically worked,—tight boilers and tubes, good grates, tight dampers, good condition of bearings, and of tires;—correct adjustments of valves, large steam room, steam passages and exhaust openings,—these engines possess them all. Nor did the writer of the article, to which "Candor" refers, ever *receive* any statement of the size, condition or economy of these engines, but has given them as the results of his own observation and measurement.

North Carolina Railroad.

The Wilmington Herald contains a copy of the recent report of this company, presented at their annual meeting at Salisbury, N. C., July 14th.

It states that from the date of the last annual meeting to December last, $500,000 had been paid in by individual stockholders, upon which event the state had made its subscription of $2,000,000, of which $500,000 have also been paid.

The construction of the road is rapidly progressing, the iron and a part of the equipments being contracted for, all of which will be delivered in season.

It was decided by the stockholders to commence immediately the extension of the branch routes from Goldsboro to Beaufort on the east, and from Salisbury to the Tennessee line, on the west end of the line. The whole amount of iron necessary for the track of the eastern division has been purchased, and 4000 tons also for the western end of the road which is to be delivered at Charleston, from which place it can be transported to Charlotte, the western terminus of the North Carolina work, by the South Carolina railroad.

Maj. Gwynn has been re-appointed chief engineer at a salary of $5,000, and is directed to superintend the surveys of the roads east and west at a salary of $3,000, in addition to the $5,000. It is understood that Major Gwinn is to reside permanently in North Carolina.

The officers of the road are as follows:

John H. Morehead, President.

Cyrus P. Mendenhall, Secretary and Treasurer.

Walter Gwynn, Chief Engineer.

Directors.—Wm. H. Washington, Rob't Strange, Jr., W. T. Dortch, N. G. Rand, Samuel Phillips, Robert P. Dick, Samuel Hargrave Chas. F. Fisher,—appointed by the Governor. Dr. F. J. Hill, John M. Morehead, Francis Fries, D. A. Davis, elected by the stockholders.

Progress of New Works.

The rapid progress of our railroads is a gatifyng fact, not only as an evidence of what we are accomplishing, but from the increased strength that each line of new road adds to the whole system. In a few months more, unbroken lines of roads will touch the Mississippi at three points—Galena, Rock Island, and Alton, near St. Louis, in the west. Every part of Ohio and Indiana, and the settled portions of Michigan are penetrated by railroads. Illinois and Wisconsin are alive with their construction, and the former will soon have as many miles as any State in the Union. A person may now go by railroad from New York to central Kentucky. Further south, the Nashville and Chattanooga road is on the eve of being completed, which will give easy access to the capital of Tennessee. In the south, a junction is about being effected between the railroads of Georgia and Alabama, thus avoiding all staging between Savannah and Mobile and New Orleans. The Wilmington and Manchester road is fast approaching completion, and will supply the very important link wanting to connect the northern and southern systems. All the unfinished lines referred to are so far advanced that they offer but little impediment to the free course of travel, and the traveller may now visit nearly every important locality in the United States, by railroads, assisted in some few instances by steamboats over good navigable water courses. The cost of travelling, too, is diminished in proportion to the increased facilities for movement, and the productiveness of our works is augmented nearly in the same ratio; and more than all, the vastly diminished cost of transportation is adding just so much to the available capital of the country. We have now reached a point in the progress of our roads at which our roads, as a whole, are entirely safe from the effect of a stringent money market. They have advanced so far as to form parts of a great system, in which each road, and every additional mile opened, adds to the business of all the others that comprise it.

Franklin, Pickaway and Ross County Railroad.

The Circleville Herald has a well digested article on the importance of this road:

It is believed that a road could be built from Columbus to Chillicothe for $20,000 per mile, and that the enhanced value of property along the line would more than pay for the cost of construction; and that a business in this valley adequate to the support of a railroad does exist, no one will dispute.

The road can therefore be built for $900,000 the distance between the two points being forty-five miles.

In the construction of railroads in the west, it has become the universal custom to borrow a considerable portion of the means; and in the adoption of this plan, a road that will cost $20,000 per mile is considered by capitalists as sufficient security for a loan of $10,000 per mile. Such being the case, it is necessary then to raise only $450,000 along the line of the road, to build it and put it in successful operation—and $450,000 can be raised.

Franklin county has $14.542,672 taxable property on the duplicate for the year 1852, and can easily raise $200,000. Pickaway county has $9,316,445 for the same year, and can raise $100,000. Ross county has $11,840,731 on the duplicate for the same year and can raise one hundred and fifty thousand dollars.

By a law passed March 1st, 1850, the commissioners of Franklin county, (if a majority of the legal voters in the county so vote) are authorised to subscribe $25,000 to the road; and the city council of Columbus is authorised to subscribe $15,000 on the same terms. The commissioners of Pickaway county, by the same law and upon the same conditions are authorised to subscribe $50,000.

Judge Stilwell, of Zanesville, one of the ablest jurists in the state, decided, in the case of Thompson against Kelley, that the present constitution of the state did *not* repeal the law authorising the vote and subscription of stock by counties; that the commissioners had power to subscribe and pay in bonds, etc. This was a case testing the constitutionality of subscription by the commissioners of Belmont county to the Central, Ohio railroad company.

Should the commissioners of Franklin county, and the city council of Columbus subscribe to the amount authorised by the law of 1850, it then leaves only $160,000 to be raised by private subscriptions in that county, and with a valuation of

over $15,000,000, as it will be this year, Franklin county can nearly raise that amount. And should the commissioners of Pickaway county subscribe $50,000, it will leave only $50,000 to be raised by private subscriptions.

Railroad Contracts.

Our Western roads have some queer ways of doing things, which appear to us to be a little too much of the *flash* order, to inspire respect for their projects, or confidence in the management of them. We refer to the manner in which they often make contracts for the construction of their roads. It often happens that one is no sooner projected than a contract is made in *gross*, for the whole work, before even an engineer has put his foot in the field. Of course nothing can be known of the route nor the cost of the proposed work. When contract prices are made to depend upon *quantities* of earth or rock work; or upon a given number of yards of masonry, with proper specifications as to the manner in which the work shall be done, contracts may be made with greater safety and propriety. But when they are taken at a *gross* sum, or at so much per mile, before the first step has been taken to ascertain what the actual cost is to be, it is, it strikes us, inverting the regular order of business. People who set to work to build a railroad with their own means, generally ascertain what is to be done before commencing work; upon the same principle that a carpenter precedes the work of the construction of a *house* by a definite *plan*. Now we think that the eclat gained by the reputation of having a road under *contract*, is more than offset by the suspicion which is often created on the part of the public that a little more *appears* than *exists*.

In *old* times it used to be thougt quite an undertaking to prepare a line of 3 or 400 miles for contract; a work frequently requiring two or three years. It was also always considered that every dollar well spent in *surveys*, often saved ten or twenty fold as much in *construction*. But this old way of doing things is quite exploded. It happened in two or three instances quite recently that the first time we ever heard of an extension line of road, was when we were told it was under contract! This is making great haste, though but little speed, the great mass are *old* fashioned still, and will require things to go in the old way, and meet their approbation. "A word to the wise,"—etc.

Cleveland and St. Lomis Railroad Co.

We learn that the stock- holders in the Cleveland and St. Louis Railroad company have organized by electing Israel Dille, of Newark; B. Barker, of Cleveland; J. G. Hussey, of Cleveland; H. Griswold, of Cleveland; H. N. Day, of Hudson, H. H. Dodd, of Toledo; and T. H. Binckley. of Lima, Directors; and the Board of Directors have elected Israel Dille, President; B. Baker, Vice President; and H. B. Spellman, Secretary. Erastus Hopkins, of Mass., has been appointed General Agent. The principal office of the company will be established in Cleveland.

The board of directors to construct the portion of the line in Indiana, consists of Erastus Hopkins, of Mass., president; Gov. Wright, of Indianapolis; J. G. Davies, of Parke county, Ind; Wm. J. Coffin, of Parke county; Wm. H. Harding, of Lafayette; H. H. Dodd, of Toledo; and Israel Dille, of Newark. Wm. H. Harding, secretary; E. M. Benson of Montezuma, treasurer.

The capital stock of the company is to be $10,000,000. The Ohio and State Journal says that Mr. Hopkins has already issued $8,000,000 for the project in New England alone! If this be the case we advise Mr. Hopkins to get through this job with the least possible delay. We know of companies that would gladly hire him at a salary of $1,000,000 a year, and *half* oi the profits

Should this company succeed in making its way through the net work of railroads that surround Cleveland for a distance of 150 miles without treading upon their neighbors toes, and push on to Alton, they will there come to a dead halt. *Alton* is the pivot around which the State System moves, and in the opinion of her people, the *central* point in creation. In conformity with this idea the present city council solemnly resolved that no railroad shall be built connecting her with St. Louis! They declared that not even the *right* to build such a road existed. To call the above project a *Cleveland and St. Louis* road, therefore, is a deception, "an attempt to obtain a good name under false pretences." If the Alton lawyers are correct, no right exists. We also think,—when the public find that the above road is *not* a *St. Louis* road, after all, and that they cannot get nearer than 20 miles to that city by it,—they will be a little cautious how they go into it.

But, should a road be eventually built from Alton to St. Louis, there will be a shorter route between that city and Cleveland than the one proposed, and taking all the important towns in its way. Upon the short route, a railroad exists for more than two-thirds the distance, and the balance is soon to be built. In the face of such facts, the friends of this road must have a mighty good appetite for railroading; and pretty good courage, to construct a *around* road the circle, when the *chord* is already occupied. But if $8,000,000 of stock be already obtained in New England for the new work, it is, we presume, too late to remonstrate, as the Irishman said to the chicken that was already half way down his throat in lieu of what was intended to be a *fresh* egg!

Memphis and Charleston Railroad.

We learn from the Memphis Enquirer that the work is progressing finely on the section of this road beyond LaGrange. There are about 800 men at work now on the first 23 miles, and additional laborers go up from Memphis with almost every train. All the heaviest work is now begun, and the Enquirer expects soon to be able to announce that the work is in actual progress on every section of the entire 43 miles. Even at this dull season the number of passengers over the road will average not less that 150 *daily*.

The iron is laid down on the Sommerville branch for a distance of about four miles, and the work is progressing well. The cars will be running over it about the middle of September.

Fremont and Indiana Railroad.

We learn from the Freemont Journal that the construction of the whole line of this road has been let out to Messrs Shoemakers and Doolittle. They are energetic contractors, and the work will be rapidely prosecuted. The road extends from Fremont to Lima, in Allen county, where it connects with the road now in course of construction, from Dayton to Toledo; and it is proposed to extend the road to Union, on the Bellefontaine and Indianapolis road, making important connections at this place with the west and south-west, and affording the most direct route from that point to Cleveland. At Fremont the road connects directly by lines already finished, with Cleveland, Toledo and Sandusky.

New and Important Project.

We have the pleasure of stating that a distinguished railroad contractor, who was never known to *fail*, has just closed a contract for a railroad from *Bellecentre*, Ohio, to the *North Pole*. The contract embraces graduation, masonry, superstructure and equipment; and is taken at rates remarkably favorable to *all* parties. The contractor has come under bonds to have the work done in season for the return of Sir John Franklin and his party, and takes *one-third* of his pay in stock. To avoid tunnelling, a level above the ordinary elevation of the country will be adopted. It is expected that in this manner, a sufficient speed may be obtained to *jump* all the water courses,—thus saving the necessity for bridges. The first division of the road is to be completed in season for the "fall business." It is believed that it cannot prove less than a 12 per cent. stock. We learn that the President of this company is now on his way to this city with a large amount of bonds for sale. It is believed they will be favorite securities in the *English* market, as this work must save that country a great deal of money, in her attempts to discover the *Pole*. All that her navigators will have to do hereafter, will be to follow the line of the above road, to find the object of their hitherto fruitless enquiries. Too much praise cannot be awarded the enterprising parties who have this project in hand, for the prompt and business-like manner in which they brought it into its present prosperous condition.

Valuable Work on Mechanical drawing.

Blackie & Son, the enterprising Glasgow publishers, have commenced the publication of another of their useful and admirable seriel works, called the Engineers' and Machinist's Drawing Book," "comprising Linear Drawing—Projections—eccentric curves—the various forms of Gearing—Reciprocating Machinery—Sketching and drawing from the Machine—Projection of shadows—tinting and coloring—and perspective."

The New York Agent of the house of Blackie & Son, George Taylor, Esq., 117 Fulton Street, has placed in our hands the first four issued numbers of this work which he has first received by the Asia.

The value of a work so full of practical ideas and detailed instruction cannot be expressed within the length of a mere book-notice. It is perhaps enough to say that it is arranged and re-written from the French of M. Le Blanc and M. M. Armengand, the former a close and instructive writer on the drawing of mechanical Engineering objects, and the latter a practical professor of industrial design. The work is superbly illustrated by steel engravings by J. W. Lowry, W. A. Beever and others. The whole work is in a style corresponding with the Engineer's and Machinists, assistant, and Clark's Railway Machinery, published by the same house. We shall recommend this work again to students of drrawing. Price 50 cents per number. To be completed in about 14 numbers.

Susquehanna Railroad Bridge.

We see it stated that the $800,000 additional stock of the Philadelphia, Wilmington and Baltimore Railroad, created to meet the cost of bridging the Susqehanna at Havre de Grace, has all been taken, and that the work of erecting the bridge will be commenced at the earliest posaible moment.

Georgia.

Atlanta and Lagrange Railroad.—We have the annual report of this company, showing the business of their road for the year ending, Dec. 31, 1852, together with the present condition and prospects of their work.

The final estimates of the chief engineer make the road and fixtures to cost $1,026,000, of which $806,000 has been paid, leaving a balance yet to be expended of $220,000.

This sum will be provided as follows:

Bonds authorised and not issued	$144,000
Subscriptions unpaid	46,973
Surplus profit of present year and grading to be taken in stock, say	29,027
	$220,000

In February of the present year, the road was opened to Lagrange, 64¾ miles from the junction with the Macon and Western railroad, and 71¼ miles from Atlanta. It is expected to complete the road to the east bank of the Chattahoocheeby the 25th of December.

The gross earnings for 1852 are	$114,498 85
Expenses of operating road for same time	44,898 96
Net profits	69,599 89
Average length of road in use	44 miles.
Cost of road and equipment in use	$495,000 00
Rate per cent on capital employed	14 4-100

The following is thetr easurer's account made to May 20, 1853:

Dr.

For scrip issued	$654,998 50
Cash on account	16,677 84
Income from road to date	188,483 64
Company bonds	81,000 00
Amount due to individuals on account	2,394 24
	$943,554 22

Cr.

By construction	$490,539 14
Iron, etc	263,618 03
Locomotives	49,898 75
Interest	71,597 19
Road expenses	61,959 81
Incidental expenses	54 60
Bills receivable	3,500 00
Balance	2,386 70
	$943,554 22

Peoria and Oquawka Railroad.

We have much pleasure, says the Peoria News, in drawing the attention of our readers to this road. The energy and activity shown by their contractors, Messrs. Cruger, Secor & Co., cannot be too highly recommended, and the ability they evinced in their initiatory steps of their contract, leave little for our citizens to wish for. We annex the names of the gentlemen to whom the work has been awarded, and have only to remark, that a better selection could hardly have been made:

Sections	1 to 6, inclusive,	Devin & Rusell.
"	7 to 8, "	Maxwell & Dodge.
"	9 to 10. "	J. B. Warner & Co,
"	11	Dunn & Reamey.
"	12	Smith & Merril.
"	13 to the Illinois Central R. R.,	William Kellogg.

Illinois Central to Chicago and Mississippi railroad, J. B. Moss & Co., of Bloomington.

Trestle-work opposite Peoria, J. Williams.

We understand that the contracts for that portion of the line between the river and Washington are to be completed by the first of November, that between Washington and the Illinois Central railroad, by the first of January, and the balance by the first of March next.

The Columbus, Piqua and Indiana Railroad and its Connections.

We informed our readers a few weeks ago, of an agreement made for an extension of the Columbus, Piqua and Indiana Railroad west to Marion, Indiana, and thence through Peru to Chicago. We have now to communicate to them the agreeable intelligence that the first link in this chain of extension (from Union to Marion a distance of 51 miles) has been let to contract—the work to be commenced within sixty days and completed within two years. The letting took place at Marion last week, and the whole of the work on this fifty-one miles, including the furnishing of the iron and laying down of the track, was awarded to a company of gentlemen at the head of which is our enterprising and energetic townsman, Jonas Ward, Esq. We learn moreover, from the best authority, that the amount of stock subscribed upon this part of the line is amply sufficient to insure the making of the road within the time contracted for; and it is understood that that portion of the line lying between Union and Hartford—all very light work—can, and probably will, be completed and run long before the day specified in the contract for completing the whole.

From Marion to Peru, and on to Chicago, the line will be immediately surveyed, and it is quite probable that some portion of it will be let to contract before the close of the season. The whole line, as our readers have been before informed, is to be under the control of the Columbus, P. and Indiana company, to be run by them, according to a contract already entered into, for ten years we believe.

In addition to this important western connection, another has just been formed by the C. P. and Ia. Co., of not less importance. A road is now in process of construction from Marion to Logansport, Indiana, which is to be continued on through the State of Illinois to the Mississippi river. From Marion to Logansport it is to be completed within two years. With this road an arrangement has also been made, by which it is to be controlled and run for ten years by the Columbus Company.

From this it will be seen that our east and west road will be amply provided with western and north-western connections which cannot fail to render it one of the best, if not the *very* best east and west road in Ohio; and for these important connections it is indebted to its energetic and indefatigable president, who has exerted himself in praiseworthy manner to secure to his road the advantage referred to.—*Piqua Register*

Knoxville and Danville Railroad.

The survey of the route of this proposed improvement is completed. The line passes through the counties of Knox, Anderson, and Campbell in Tenneesee, and Whitley, Laurel, Pulaski, Rockcastle, Lincoln and Boyle, in this State. The Danville *Tribune* is informed that the line through these counties measures one hundred and sixty-two miles, but by connecting and running more directly from a point in Whitley, that sixteen miles of the distance may be saved, and the entire line reduced to one hundred and forty-six miles. The maximum grade on the line run is fifty-two feet. In passing the Cumberland mountain at Elk Gap, the grade on the Kentucky side is fifty feet, and on the South, or Tennessee side, it is thirty-four feet. The entire line is represented as a very favorable one, as to grades, curves and magnitude of work. The cost of construction, it is confidently believed by the engineers, will range between $20,000 and $25,000 per mile.

The citizens of Pulaski county being dissatisfied that the town of Somerset was left off the line by the above survey, have fully organized the "Danville, Somerset and Knoxville Railroad company," of which the Board of Directors have elected Cyrenius Wait, Esq., President.—The intention is to secure the services of a competent corps of engineers and make an accurate survey of the proposed route *through Somerset* as soon as practicable.

The Lawrenceburg Register of recent date, in speaking of the Ohio and Mississippi railroad says:

The work on this great road is progressing in a rapid manner. The force at work upon the road between Cincinnati and the Jeffersonville road is 2,360 laborers, 309 mechanics and 709 horses. The 10,000 tons of iron purchased for the road is beginning to arrive by way of Quebec and Toledo. A large number of cars are on the company's grounds below Mill creek.

The citizens of Meriwether and Harris counties Ga., are engaged in the very laudable effort to build a railroad from Grantsville to Hamilton, passing through Greenville. Grantsville is on the Lagrange road, 10 miles west of Newnan. It is understood that Harris county will extend the road to the Muscogee line, if assurances are given that it shall be continued to Columbus, a distance of only ten or 11 miles. The road is 60 miles long.

The Metropolitan railroad company are before the city council of Boston asking the right of way through the principal streets of that city.

The whole line of the Virginia Central railroad is now under contract as far as Clifton Forge. An engine has been transported across the mountain to convey passengers between Waynesboro and Staunton, and a track across the mountain has been finally determined upon, and by December it is calculated to have the cars running through to Staunton.

The track of the Virginia and Tennessee railroad is laid to within about three miles of the Big Spring. They expect to reach Christiansburg in October.

Solid Brass Tubes.

The American Brass Tube company, at Somerville near Boston, have for two years past been engaged in the manufacture of solid brass tubes for locomotive engines. These are now largely used by the principal locomotive establishments in the country, and have always given good results. The processes of manufacture are identical with those pursued in England, where the brass tube has been a *settled fact* for many years. The advantages of the solid brass tube are numerous and important, and among which the following are sufficient to justify their general introduction.

1st. Cheaper in first cost.

2d. More durable, wearing from one-half longer to twice as long as copper tubes.

3d. They possess a highly planished surface, both outside and inside, and are found in consequence to be less liable to attract scales. The incrustation of tubes, in districts where water impregnated with lime is used, is a great difficulty in the way of the economical working of engines, but by the use of these tubes may be sensibly lessened.

4th. Having no joints they are safe against bursting or leaking.

5th. While of the same external diameter from end to end, on the outside, the thickness is increased at one end to provide for the increased destruction of metal nearest the surface.

6th. Being very stiff, they are not so readily warped or *sprung* by the pitching of water, liberation of steam or other causes operating within the boiler, and consequently remain much tighter

within their tube sheets. Notwithstanding their hardness, however, they may be easily set by annealing their ends which is always done, and when ordered for feed pipes for the force pumps, or other pipes requiring bends, they are annealed throughout.

The Boston Locomotive Works use these tubes *exclusively*, while many other builders are using them in large lots and with great satisfaction.

Atlantic and Ohio Railroad.

The Warren (Ohio) Transcript states that the books of subscription to the capital stock of the Atlantic and Ohio Railroad Company have been opened. That paper states that the necessary papers have been filled at Columbus for the organization of the Company with a capital of $6,000,000, and that the project has been planned by some of the most wealthy and energetic capitalists in Ohio. The line designated is to commence on the Pennsylvania State line in Franklin county, to Columbus, and thence to the Ohio river, connecting with the Maysville and Lexington road. Lexington and Danville in Kentuckey, are points of radiation from within, by roads now in course of erection. Charleston, S. C. Savannah, Mobile, Nashville and Louisville will be reached in the most direct lines possible.—With chatered rights now in reach in Pennsylvania, to connect with the Sunbury and Erie and the Cattawissa and Easton roads, a line will be formed with a saving of Distance to New York and Philadelphia of at least one hundred and fifty miles, and, with connections now in progress of construction, will give a uniform gauge from New York and Philadelphia to the great South, Cincinnati and Chicago.

Michigan Central Railroad.

The Central Railroad Company have made their annual report to the Stockholders, from which we gather the following statistics and statements. The report states foe the year ending 31st May, 1853, the gross receipts have been—

For Passengers	$590,997 57
For Freight	497,183 35
For Miscellaneous	61,356 79
	1,145,537 71
Operating Ex	566,721 98
Leaving net Receipts	$582,815 73
Surplus from last year	2,158 39
	584,974 12
Interest	279,309 57
Dividend 1852, 8 per cent	320,000 00

By Mr. Uptons Circular of December, 1852, it will be seen that there had been earned

For the financial year	$323,735 54
The dividend then declared, of	320,000 00
Left a surplus of	$3,735 54

From which it results that one winter's receipts have been $18,070 99 less then interest and expenses.

It should be stated that while the road has been running about twenty per cent. more distance, than the previous year, at a large increase of expense, it has also had to contend for the first time with a competitor enjoying the advantage of a continuous Railroad communication with the seaboard and Ohio River.

During this year of severe competition, unaided by the connecting lines East and West of us, upon which we can hereafter rely, our through passenger business has fallen off only about $45,000. Our way passenger receipts have increased about $54,000 and our freight receipts have increased about $78,000 making $132,000. It is now rendered certain that, by means of the Aurora and Illinois Central Roads, we shall this autumn open a direct communication with from 200 to 300 miles of railroad towards the Southwest.

The New Albany Company have sixty miles in operation, from which we have as yet derived little benefit. We are assured that the whole road from Michigan City to the Ohio will be opened within the year.

The Great Western Railway has not advanced so rapidly as we were led to expect, and with so much work remaining to be done, the time of its completion cannot be relied upon with absolute certainty.

A comparison of the present report with former official report, furnishes the following data as to cost of the road and the present debt of the Company:

	June, 1851.	June, 1852.	June, 1853.
Capital Stock. Mich. Central Co.	$2,638,00	$3,237,500	$4,234,000
BOND ACCOUNT. Seven per cent. Unconvert. Bds.	354,500	160,000	69,000
Eight per cent. Unconvert. Bds.	1,142,950	1,184,950	1,122,700
Eight per cent. Convertible Bds.	2,305,500	2,621,000	2,339,000
Bills payable	191,388	949,579	631,176
Income Account	76,312	2,153	*
Six per cent. (Sterling) Unconvertible Bds.			463,613
Unpaid Dividends	486	1,512	344
Total	$6,709,187	$8,156,700	$8,856,834

Increase in two years of total cost, as represented by stock and debt ... $2,150,647

* Income account deficient, $14,335 45.

Estimating the road as being 280 miles in length, the cost per mile is about $31,600. This includes $253,000 reported as paid upon the $500,000 of stock taken by the Central Company in the stock of the New Albany and Salem Railroad Company.

For the foregoing statement, it appears that in June, 1851, the Income Account of the Company was in

Credit	$76,312
In June, 1853, it was in Debt	14,335
Total	$90,647

Consequently, the Company has within the past two years made dividends exceeding by $90,647 its earnings for that time.

New York Central Railroad.

The directors of the Central road met in Albany on the 28th ult.

Chauncey Vibbard, of Schenectady, was appointed General Superintendent of the road. In Mr. Vibbard the company has secured the services of a most capable, efficient and faithful Superintendent. As Superintendent of the Utica and Schenectady railroad, he established a reputation which commended him strongly to the consolidated company. The Board was unanimous in this selection.

Carlos Dutton, the excellent Superintendent of the Rochester and Syracuse railroad, was unanimously appointed Assistant Superintendent. Mr. Dutton is to have charge of the Old and Direct roads between Syracuse and Rochester.

The appointment of a Superintendent for the Rochester and Buffalo and Rochester, Lockport and Niagara Falls roads, was referred to a committee.

Steps were taken to double the track of the road west of Syracuse with all convenient despatch; and the Superintendents were directed to put the whole line in the best possible running order.

Ohio and Indiana Railroad.

The Fort Wayne Sentinel says that the work on this road is progressing very favorably, and that notwithstanding the great delay caused by the wet weather in the spring, there is every reason to hope the whole will be completed and the cars running to Fort Wayne by the 1st of January next. More than two-thirds of the iron has arrived at Montreal, and is on its way to Lake Erie. The road will be completed to Bucyrus by the last of this month, when the track-layers now employed there will be transferred to the crossing of the Mad River railroad. Track-laying will be commenced at Fort Wayne on the 1st of next month, and at Delphos by the 1st of September. The grading is so far progressed that no obstruction is anticipated to the laying of the rails, and nothing but a very unexpected scarcity of hands can prevent the completion of the work by the close of the present year.

Lackawanna and Bloomsburg Railway.

E. McNeill has been elected Chief Engineer of the Lackawanna and Bloomsburg railroad company, and Charles D. Shoemaker, Esq., Treasurer.—This road, from Pittston, will connect with the Catawissa road at Fishingcreek, and with the Susquehanna road at Northumberland or Sunbury, and will thus from a part of the Susquehanna line connecting the North with the South. The Pittston Gazette says that at a meeting of the stockholders held at Pittston on the 11th inst., "E. McNeil, Esq., Engineer, presented a report of the survey which he has recently made of the road. The estimated cost of the road, embracing grading, superstructure, bridging, turn outs, furniture, engine and station houses, locomotives, and everything necessary to make it a first-class road, to be $2,162,000. The length of the road is fifty-five miles from Scranton to Bloomsburg. The turn outs necessary for the use of the road, or contemplated in the Engineer's report, are equal to four miles in length."

Pacific Railroad.

The first division of the Pacific railroad, extending from the city of St. Louis to Franklin Station, a distance of 38 miles, was formally opened on the 19th ult., and made the occasion of a public celebration by the company.

A train with a large number of guests ran through to Franklin, where a bountiful entertainment was provided. Several popular speakers were present.

Foundry of Bush and Lobdell.

We learn that the damage sustained by the recent fire at the machine shops of these gentlemen will not interfere materially with their railroad wheel business, as their Foundry was not injured. Their "car wheel" and "tire" patterns in general use were not destroyed, and orders will receive prompt attention as heretofore. They are now rebuilding their machine shop and pattern shop, which they expect to have completed during this month.

The New Jersey Locomotive and Machine Company,

JAMES JACKSON, Pres't, JOHN BRANDT, Sup't.

PATERSON, N. J.,

Will execute *expeditiously* and *promptly*, orders for

LOCOMOTIVE ENGINES,

of very superior quality and workmanship.

The Locomotives built under the management of Mr. BRANDT, are well known and need no other reference.

Forgings and *Castings* for *Locomotives, Tenders, Wheels, Tire, Axles, Chairs*, etc., etc., and all kinds of *General Locomotive Work* done in the very best manner.

Patterson, N. J., August 2, 1852.

Cardner's Rock Drill,

Designed for Tunnelling, Mining, Quarry Use, and Rock Excavations of all descriptions, by the use of which a saving of 50 or 75 per cent is made; operated by Hand, Horse or Steam power.

Applications for Territorial Rights and Machines, must be made to the Patentee. A Working Machine is now in the Crystal Palace.

G. ARTHUR GARDNER,
Trinity Building, New York.

To Contractors.

MILWAUKEE AND MISSISSIPPI RAILROAD.

THE GRADING, BRIDGING and MASONRY for the Milwaukee and Mississippi railroad from Madison, the capital of the state to the crossing of the Wisconsin river—a distance of about 35 miles—will be let on the 22d day of August, 1853, to be completed on or before the first day of April 1854.

The line will be divided into sections of about 1 mile in length, and the proposition may include one or more of them. About twelve miles of this work is quite heavy, averaging some 30,000 cubic yards per mile, which will make good Winter work.

It is also the expectation of the railroad company to have the location of the balance of the road to the Mississippi river—about seventy miles—ready for letting by the middle of September, 1853.

Contractors will find this a desirable work, the excavation being mostly sand and gravel, besides it is easy of access, and is through a healthy and well watered section of the state.

Propositions will also be received for 100,000 CROSS TIES, delivered anywhere on the line of the M. & M. R. R., between Milwaukee and the Wisconsin river—to consist of White Burr, Red Oak and Red Elm; to be six inches in thickness and not less than six inches face, and eight feet in length.

The plans, specifications and profiles will be ready for examination on and after August 15, 1853.

A. L. CATLIN, Contractor.
EDWARD H. BRODHEAD,
Chief Engineer.

Notice to Contractors.

SEALED proposals will be received by the undersigned, through the Post Office at this place, until noon, Wednesday, August 17th, for the Grading and Masonry of the Flemington Railroad, extending from Lambertville to Flemington, 11⅓ miles.

The line will be ready for inspection, blanks will be furnished, and profiles exhibited, on and after August 12th.

ASHBEL WELCH, Engineer.
LAMBERTVILLE. N. J., July 28, 1853.

SIXTY MILES DISTANCE SAVED!—ONLY THIRTY-SIX AND A HALF HOURS TO CHICAGO.

MICHIGAN SOUTHERN RAILROAD LINE, carrying the Great Western U. S Through Mail—FOR CHICAGO AND ST. LOUIS, MILWAUKEE, RACINE KENOSHA, and all Ports on Lake Michigan.—Through from Buffalo to Monroe IN FOURTEEN HOURS WITHOUT LANDING.

The following magnificent and unequalled steamers from the line between Buffalo and Monroe:

EMPIRE STATE. J. WILSON, Commander, leaves Buffalo Mondays and Thursdays.

SOUTHERN MICHIGAN, A. D. PERKINS, Commander, leaves Buffalo Tuesdays and Fridays.

NORTHERN INDIANA, I. T. PHEATT, Commander, leaves Buffalo Wednesdays and Saturdays.

One of the above splendid steamers will leave the Michigan Southern Railroad Line Dock, at 9 o'clock, P. M. every day, (except Sundays) and run direct through to Monroe without landing, in 14 hours, where the Lightning Express Train will be in waiting to take passengers direct to Chicago in 8 hours; arriving next evening after leaving Buffalo.

THE LAKE SHORE RAILROAD.

runs in connection with this line, forming the only continuous line of Railroad to Chicago and the Illinois River.

For Through Tickets, by New-York and Erie and Buffalo and New-York City Railroad via Buffalo, or by the People's Line of Steamboats, Hudson River Railroad via Albany and Buffalo, apply to

JOHN F. PORTER, Agent,
No. 193 Broadway, corner Dey-st., N. Y.

AMOSKEAG MANF'G CO.

MANUFACTURERS of LOCOMOTIVE and STATIONARY STEAM ENGINES, Boilers, Cotton and Woolen Machinery, Tools, Turbine Wheels, Mill Work and Castings of every description.

MANCHESTER, N. H.

O. W. BAYLEY, *Agent*,
Manchester, N. H.

WM. AMORY, *Treasurer*,
65 State st., Boston, Mass.

1y jy 6.

To Contractors.

SEALED PROPOSALS will be received at the Engineer's office of the Lexington and Big Sandy Railroad, in Mt. Sterling, Ky., until Aug. 10th, at sun down for the graduation and masonry of the whole of said Railroad, a distance of 125 miles. Bids will be received for any number of sections, the company reserving the right to reject all propositions, if none are satisfactory.

Propositions are also invited by contractors of ability, for the whole road.

This road runs through some of the finest portions of the State, the facilities for the supplies of every kind being very abundant.

Plans and specifications may be seen at the office after July 1st.

J. B. WESTBROOK, Chief Engineer.
Portland, April 9, 1853.

Railroad Letting.

KENOSHA AND BELOIT RAILROAD.

ON and after the first day of August next, and until the 15th of August, inclusive, proposals will be received, under seal, at the Office of the Kenosha and Beloit Railroad company, in Kenosha, for the construction of the entire road from Kenosha to the Rock River Union Valley Railroad, a distance of about 50 miles.

The proposals may be made for the grading, masonry, ties, and entire construction in a single contract—or for the same and all items separately, and in independent contracts by different individuals. They will likewise be received for the above in parts. The work will besides be divided into sections of moderate length, and proposals, as above, for a single section or any number of sections will be received.

Profiles and specifications may be inspected at the Engineer's Office in Kenosha, on and between the days above specified, and forms of proposals will be supplied to all who desire to take contracts.

ALEX. C. TWINING, Engineer.
Engineer's Office, Kenosha, June 20th.

RICHARD NORRIS. HENRY LATIMER NORRIS.

Richard Norris & Son,

NORRIS' LOCOMOTIVE WORKS, BUSH HILL,
PHILADELPHIA,

MANUFACTURE to order Locomotives, exclusively, on any plan, or of any size—of best materials and workmanship. Their Works having been this year greatly enlarged, and furnished with the most approved Tools, they are enabled now, having a large number of Workmen employed, to execute orders with despatch.

June 9, 1853.

Railroad Iron.

623 Tons T Rails of good quality, 59 lbs. to the yard to arrive during July, for sale by

29tf JOHN H. HICKS, 90 Beaver st.

Railroad Iron.

2000 Tons of Rails, weighing from 58 to 60 lbs. per yard of Favorite Patterns, now on hand in New York, For sale by

W. F. WELD & CO.,
June 21, 1852. 42 Central Wharf, Boston.

INDUSTRIAL WORKS.

BEMENT, COLBY, DOUGHERTY & CO.,
IRON FOUNDERS AND MACHINISTS,
Callowhill Street, between Schuylkill Second and Third,
PHILADELPHIA.

MACHINISTS TOOLS, particularly adapted for Railroad Work, MILL WORK, and Heavy Castings, for cupolas, buildings, etc.

E. D. MARSHALL, JAMES DOUGHERTY,
G. A. COLBY, WM. B. BEMENT

Notice to Contractors.

ST. LOUIS AND IRON MOUNTAIN RAILROAD.

PROPOSALS will be received at the office of Company in St. Louis, Mo., for the Graduation, Masonry and Bridging of that portion of the St. Louis and Iron Mountain Railroad included between St. Louis and the Iron Mountain, or Pilot Knob, distance about 84 miles. The preliminary surveys and approximate locations are now complete, and the final location for construction in rapid progress, and may be closed by the 1st Sept. Meanwhile, profiles and plans, now ready, will, with examination of the country, give all necessary data.

The work on this road is heavy, including three tunnels, and much rock work and masonry, about 20 miles of the road, shows "side-hill" work, and the balance heavy through work. The Iron Mountain is 700 feet above the river at St. Louis; but two principal depressions are to be crossed before reaching that height. The country passed through is healthy and well watered.

Proposals will be received (by quantities) for the whole or a part of the road, but contracts will only be made with responsible parties. No contracts will be closed before the 15th of August, and no sooner thereafter than satisfactory offers are received from responsible parties. The road will hereafter be extended to the Arkansas line, to connect with the Cairo and Fulton road, and a branch to the Mississippi River, at Cairo or new Madrid, is also contemplated.

WM. M. M'PHERSON, Pres't.
THOS. S. O'SULLIVAN, Consulting Engineer.
J. H. MORLEY, Eng. in Charge.
4w. St. Louis, July 21, 1853.

Notice to Contractors.

SEALED PROPOSALS will be received at the Engineer's Office of the Pittsburg, Maysville and Cincinnati Railroad, in M'Connellsville, until the 20th of August, for the Graduation and Masonry of the line of road (about 35 sections) between the Muskingum River and the Central Ohio Railroad.

Bids enclosing proper testimonials will be received for the whole or any number of the above sections.

Plans and specifications will be ready for examination after the 20th of July.

The division between the Muskingum and Hocking Rivers will be offered for contract as soon as the location is completed.

ROBERT M'LEOD,
Chief Engineer.
M'CONNELSVILLE, June 4th, 1853.

Notice to Contractors.

JEFFERSONVILLE RAILROAD.

SEALED Proposals will be received at the office of the Company at Jeffersonville, Indiana, until 10 o'clock, A. M., on Wednesday, the 7th day September, 1853, for the clearing, grading and bridging the road between Edinburg and Indianapolis.

Proposals may be made for sections, divisions, or the entire line, about 30 miles, payable in the 7 per cent mortgage bonds of the Company or part bonds and part cash, and also for payments entirely in cash.

The company reserves the right to accept such proposals as in their judgement will best secure the prompt construction of the road, and to reject all, if none are satisfactory.

The route traverses a fertile country, furnishing abundant supplies of all kinds, and the line is easy of access at all points.

Bidders will please give their post office address.

WILLIAM G. ARMSTRONG, President.
Jeffersonville, July 9, 1853.